



DM12-01.01.04en



# Service manual

## MIV V4+ Mini

DC INVERTER R410A

~220V, 1Ph, 50Hz

MVUH120A-VA1

MVUH140A-VA1

MVUH160A-VA1



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# Part 1 General Information

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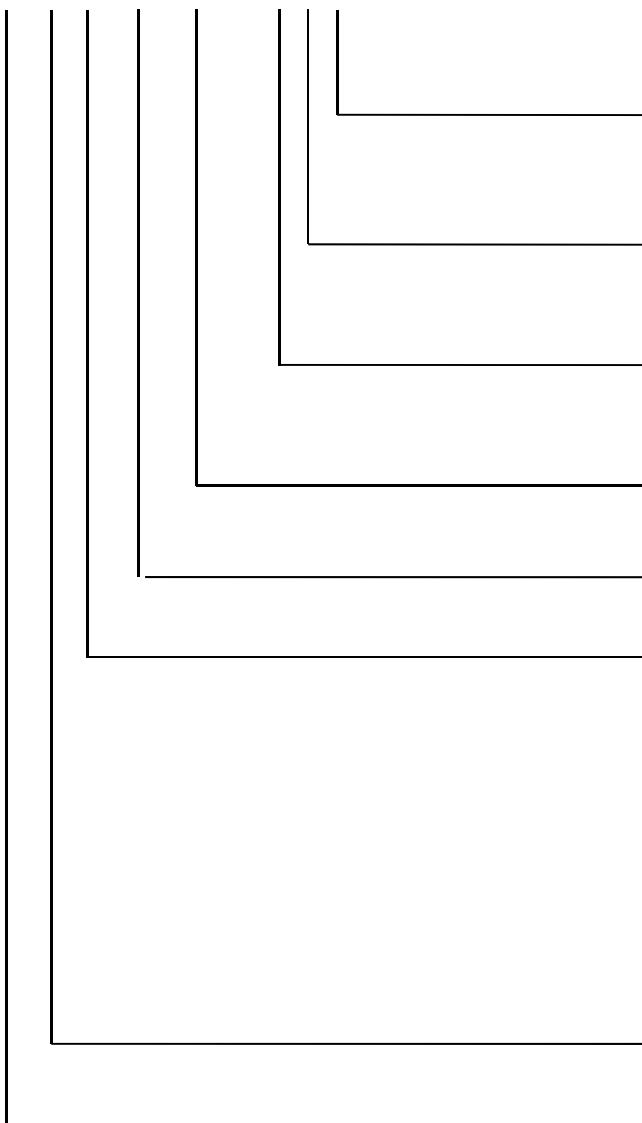
**1. Product Line-up****Outdoor Units**

Model name	Dimension body(mm)	Net/Gross weight (kg)	Power supply
MVUH120A-VA1	Width: 900 Height: 1327 Depth: 320	95/106	220~240V-1ph 50Hz
MVUH140A-VA1	Width: 900 Height: 1327 Depth: 320	95/106	220~240V-1ph 50Hz
MVUH160A-VA1	Width: 900 Height: 1327 Depth: 320	100/111	220~240V-1ph 50Hz

## 2. Nomenclature

### 2.1 Outdoor unit:

#### **MVUH120A – VA1**



##### **Power**

**1** - 1 phase, 50 Hz  
**3** - 3 phases, 50 Hz

##### **Refrigerant**

**A** - R410A  
**B** - R22

##### **Inverter**

(in)**V**(erter) - inverter  
**S**(tandard) – on/off

##### **Model**

**A...Z**

##### **Capacity index**

**kW\*10**

##### **The main feature of the system air cooled:**

**C**(ooling) – cooling only  
**H**(eat pump) – cooling and heating  
**R**(ecovery) – heat recovery, 3-pipe

##### **water cooled:**

**Q**(ooling) – cooling only  
**W**(ater) – cooling and heating  
 (reco)**V**(ery) – heat recovery, 3-pipe

##### **Identifier of the outdoor unit**

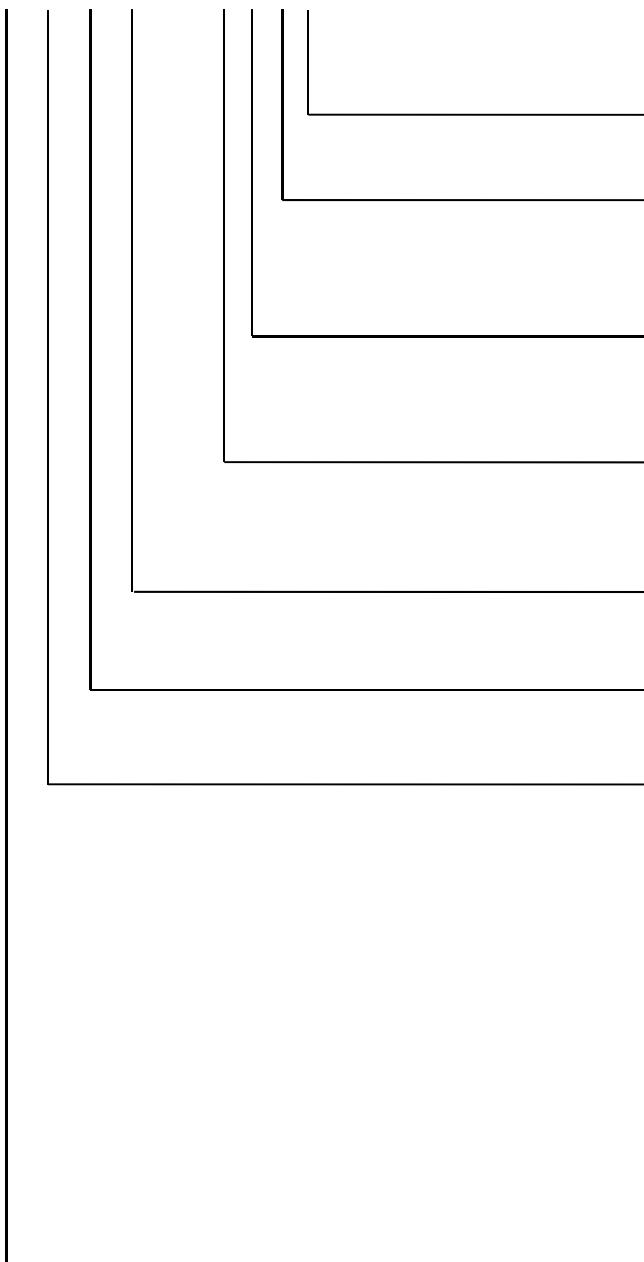
(o)**U**(tdoor)

##### **Manufacturer's brand and class of the system**

**M**(idea) **V**(RF)

## 2.2 Indoor unit:

### MVC28A – VA1



#### Design features (may be absent)

For example: **G**(rey), **W**(hite) – color

#### Power

**1** - 1 phase, 50 Hz  
**3** - 3 phases, 50 Hz

#### Refrigerant

**A** - R410A  
**B** - R22

#### Inverter

(in)**V**(erter) - inverter  
**S**(tandard) - on/off

#### Model

**A...Z**

#### Capacity index

**kW\*10**

#### Type of the indoor unit

**W**(all) - wall  
 (ca)**S**(sette) – cassette 600x600  
**C**(assette) - cassette  
 (o)**N**(e way) – 1-way cassette  
**T**(wo way) – 2-way cassette  
**L**(ow) – low static pressure duct  
**M**(edium) – medium static pressure duct  
**H**(igh) - high static pressure duct  
 (fle)**X** – ceiling & floor  
**F**(loor standing) – floor standing (колонный)  
**E**(floor-standing exposed) – floor standing exposed  
**D** – console

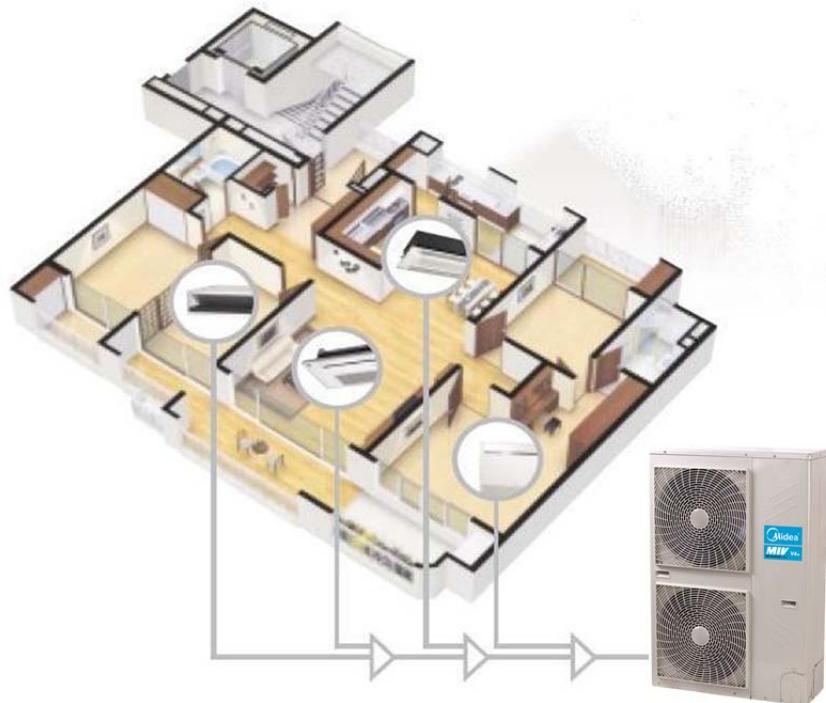
#### Manufacturer's brand and class of the system

**M**(idea) **V**(RF)

### 3. Features

#### 1 Widely application

The Full DC Inverter mini VRF system is a highly efficient solution for small commercial buildings requiring heating and cooling of up to 8 zones with one outdoor unit. Such as villa, restaurant, school etc.



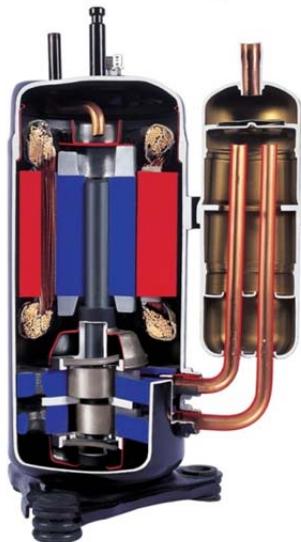
Midea offers a variety indoor unit, more than 100 models of 15 types. Capacity ranges are from 2.2Kw to 14Kw. it is full compliance with residential and light commercial place. Our systems can operate up to 130% of capacity which allows any system to be designed to the customers and applications needs.



## 2 High efficiency and Energy-saving

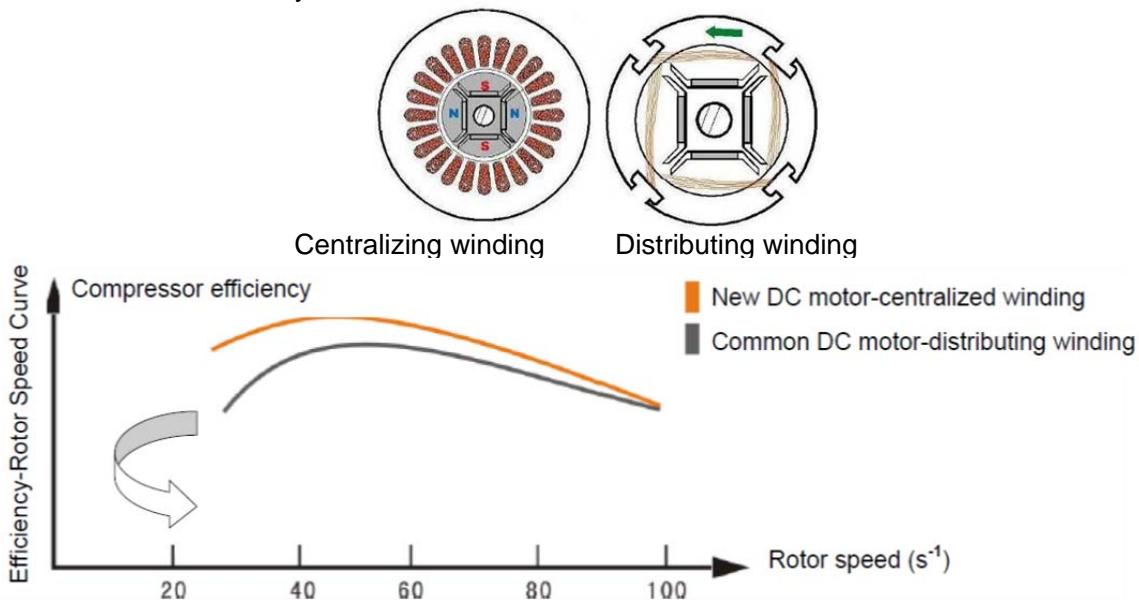
DC inverter Mini VRF realized the industry's top class energy efficiency with cooling and heating COP by adoption of Brushless Reluctance DC compressor control, DC Fan motor and improved heat exchanger performance with a new design.

### 2.1 High efficiency DC inverter Double rotor compressor, saving power 25%



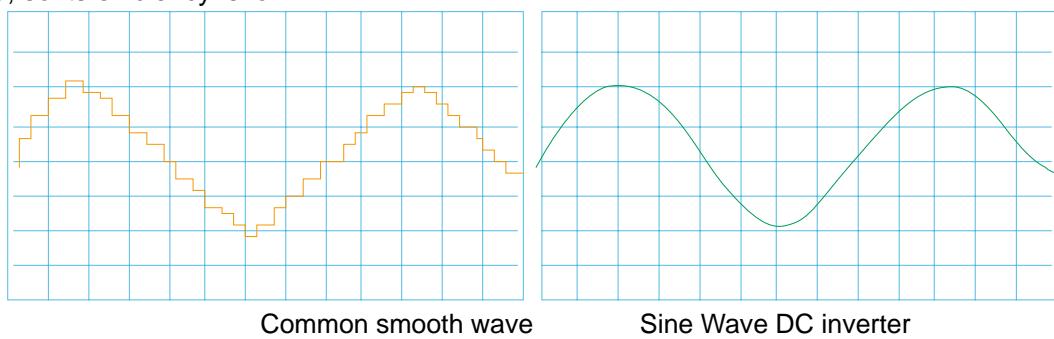
- High efficiency DC inverter
- Optimize compressor start-up technology
- Wider operating frequency range
- Compact structure
- Better balance and lower vibration

The AC load ratio of building is 30%-75%, the area is 55%, most of the AC runs in the mid load, so the mid load operation ratio control the whole year AC running charge.



### Smooth sine wave DC Inverter

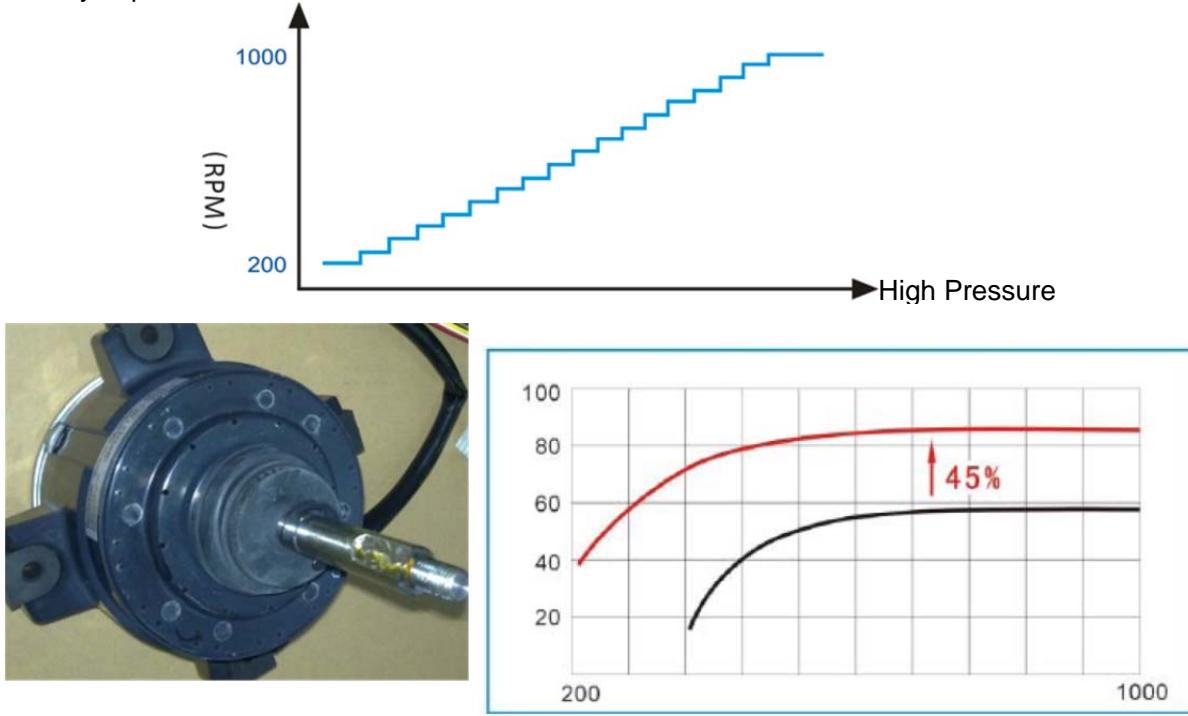
Motor uses 180° sine wave vector drive technology to ensure transducer to output smooth curve, which show motor rotor speed to run smooth. While, common frequency motor outputs smooth wave not to precisely show motor speed, so its efficiency is low.



## 2.2 High efficiency DC Fan motor, saving power 50%

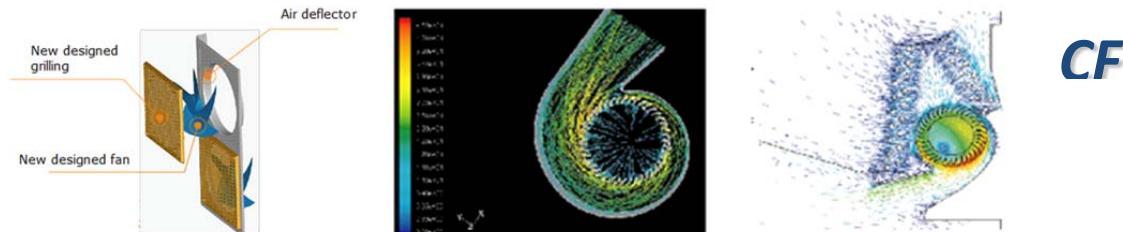
According to the running load and pressure, it controls the speed of DC fan to achieve the min. energy consume, to reach the best effect.

- Used across entire range of models.
- Efficiency improvement by up to 45% especially at low speed.



Motor rotor speed waves among  $\pm 5\%$ , and can rapidly match DC Inverter Compressor to output, and enhance efficiency in part load.

Optically design the fan shape and air designed deflector, which increase the air volume and reduce the running noise.

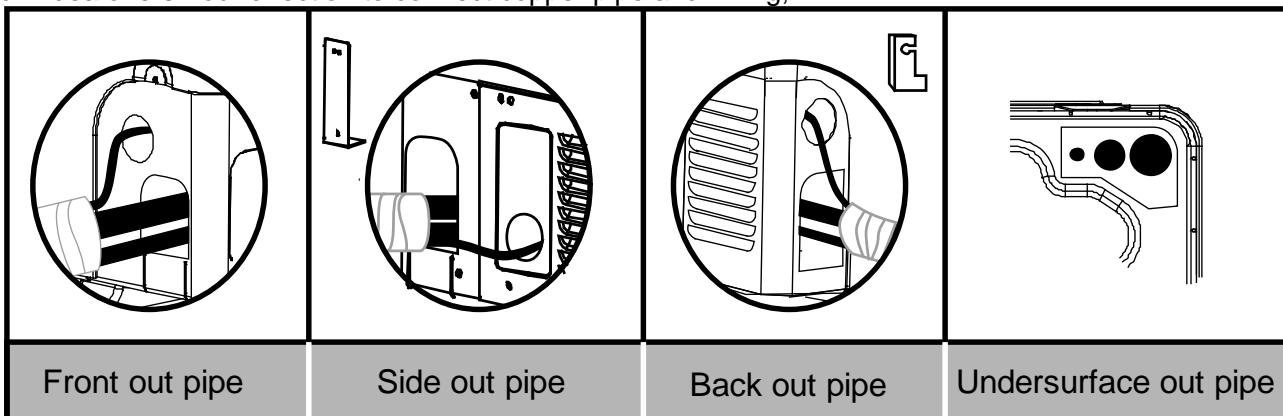


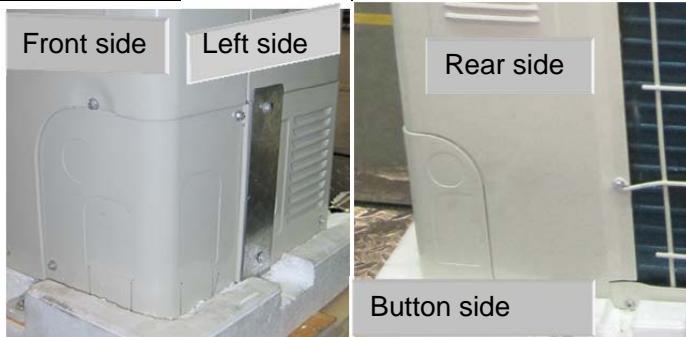
## 3 Convenient for installation and service

### 3.1 Easy piping connection

Branch pipe and Four divergence box is available for Full DC inverter system.

And Midea offers Four direction to connect copper pipe and wiring,





### Easy installation

Branch pipe and four divergence box are both available for Full DC inverter system, can be selected according to customs variety requests.



### 3.2 Auto addressing

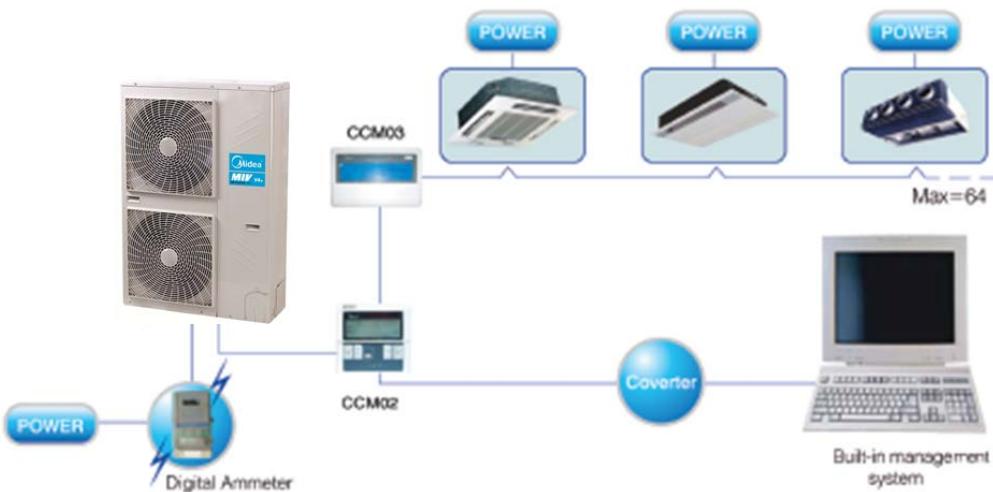
Addressing outdoor units and indoor units are automatically done just by pressing the button of the controller.

- The outdoor unit can automatically distribute the address to indoor units without any manual settings.
- Wireless controller can enquiry and modify every indoor units address.



It is possible to enable the shared use of the wiring between indoor & outdoor units, as well the centralized control.

Connect ammeter and CCM02 and NIM06 to Mini VRF to achieve power consumption calculation.



# Part 2 Outdoor Units

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## 1. Specifications

Model		MVUH120A-VA1	MVUH140A-VA1	MVUH160A-VA1
Power supply	V-Ph-Hz	220-240V~50Hz	220-240V~50Hz	220-240V~50Hz
Cooling	Capacity	kW	12	14
	Input	kW	3.25	3.95
Heating	Capacity	kW	13.2	15.4
	Input	kW	3.47	4.16
Max. input consumption	W	5319	6440	7100
Max. current	A	24.4	29.8	28.6
Compressor	Model	TNB306FPGMC		LNB42FSCMC
	Type	Scroll		Scroll
	Brand	MITSUBISHI		MITSUBISHI
	Capacity	Btu/h	33642	33642
	Input	W	3080	3080
	Rated current(RLA)	A	13.5	13.5
	Crankcase	W	25	25
	Refrigerant oil	ml	FV50S 870ml+630ml	FV50S 870ml+630ml
				FV50S 1400ml+250ml
Outdoor fan motor	Model	WZDK100-38G		WZDK100-38G
	Type	ACmotor		ACmotor
	Brand	Panasonic		Panasonic
	Insulation class	E		E
	Safe class	IP23		IP23
	Input	W	2*100	2*100
	Output	W	2*85	2*85
	Rated current	A	2*0.9	2*0.9
	Speed	r/min	800	800
Outdoor fan	Material	ASG20		ASG20
	Type	Axial fan		Axial fan
	Diameter	mm	508	508
	Height	mm	170	170
Outdoor coil	Number of rows	2		2
	Tube pitch(a)x row pitch(b)	mm	25.4/22	25.4*22
	Fin spacing	mm	1.6	1.6
	Fin type (code)	Hydrophilic aluminum		
	Tube outside dia.and type	mm	Φ7.94	Φ7.94
			Inner groove tube	Inner groove tube
	Coil length x height	mm	1276*870	1276*870
	Number of circuits		7	7
Outdoor air flow		m <sup>3</sup> /h	6000	6000
Outndoor sound level(sound pressure level )		dB(A)	57/54	57/54
Outdoor unit	Dimension(W*H*D)	mm	900*1327*320	900*1327*320
	Packing (W*H*D)	mm	1030*1456*435	1030*1456*435
	Net/Gross weight	kg	95/106	95/106
Refrigerant	Type		R410A	R410A

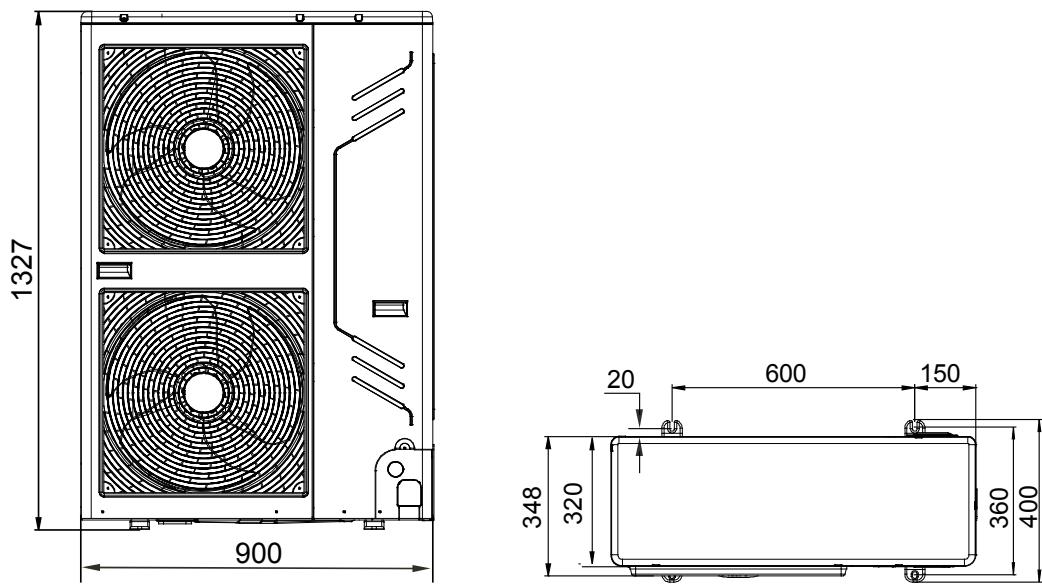
	Charged volume	g	3300	3900	3900
Throttle type			Electron expansion valve	Electron expansion valve	Electron expansion valve
Design pressure	MPa		4.4/2.6	4.4/2.6	4.4/2.6
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.52/Φ15.9	Φ9.52/Φ15.9	Φ9.52/Φ15.9
	Max. refrigerant pipe length	m	100	100	100
	Max. difference in level	m	8	8	8
Connection wiring	Power wiring	mm <sup>2</sup>	5 core x 4.0	5 core x 4.0	5 core x 4.0
	Signal wiring	mm <sup>2</sup>	3 core shielded wire x 0.5	3 core shielded wire x 0.5	3 core shielded wire x 0.5
Ambient temp	°C		(Cooling -15~48) (Heating -15~27)		

**Notes:**

1. The cooling conditions: indoor temp.: 27°C DB (80.6°F), 19°C WB (60°F) outdoor temp.: 35°C DB (95°F) equivalent pipe length: 5m drop length: 0m.
2. The heating conditions: indoor temp.: 20°C DB (68°F), 15°C WB (44.6°F) outdoor temp.: 7°C DB (42.8°F) equivalent pipe length: 5m drop length: 0m.
3. Sound level: Anechoic chamber conversion value, measured at a point 1 m in front of the unit at a height of 1.0m. During actual operation, these values are normally somewhat higher as a result of ambient conditions.
4. The above data may be changed without notice for future improvement on quality and performance.

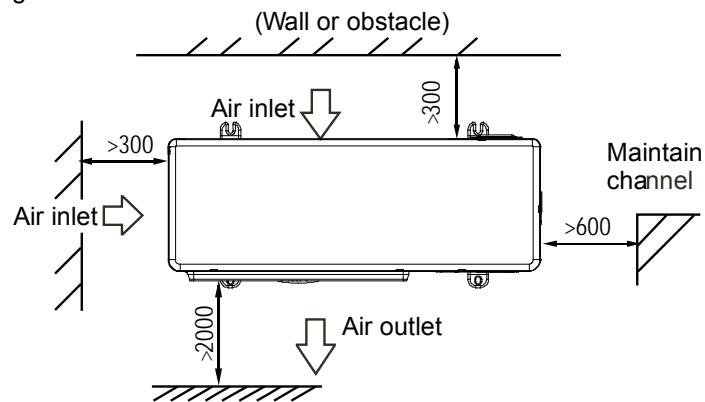
## 2. Dimensions

Unit: mm

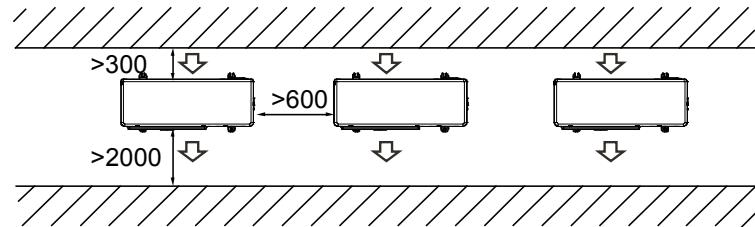


### 3. Service Space

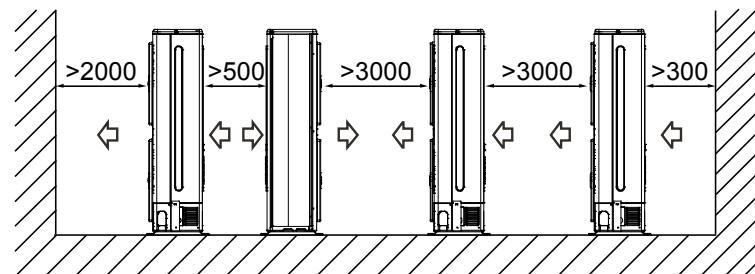
- Single unit installation



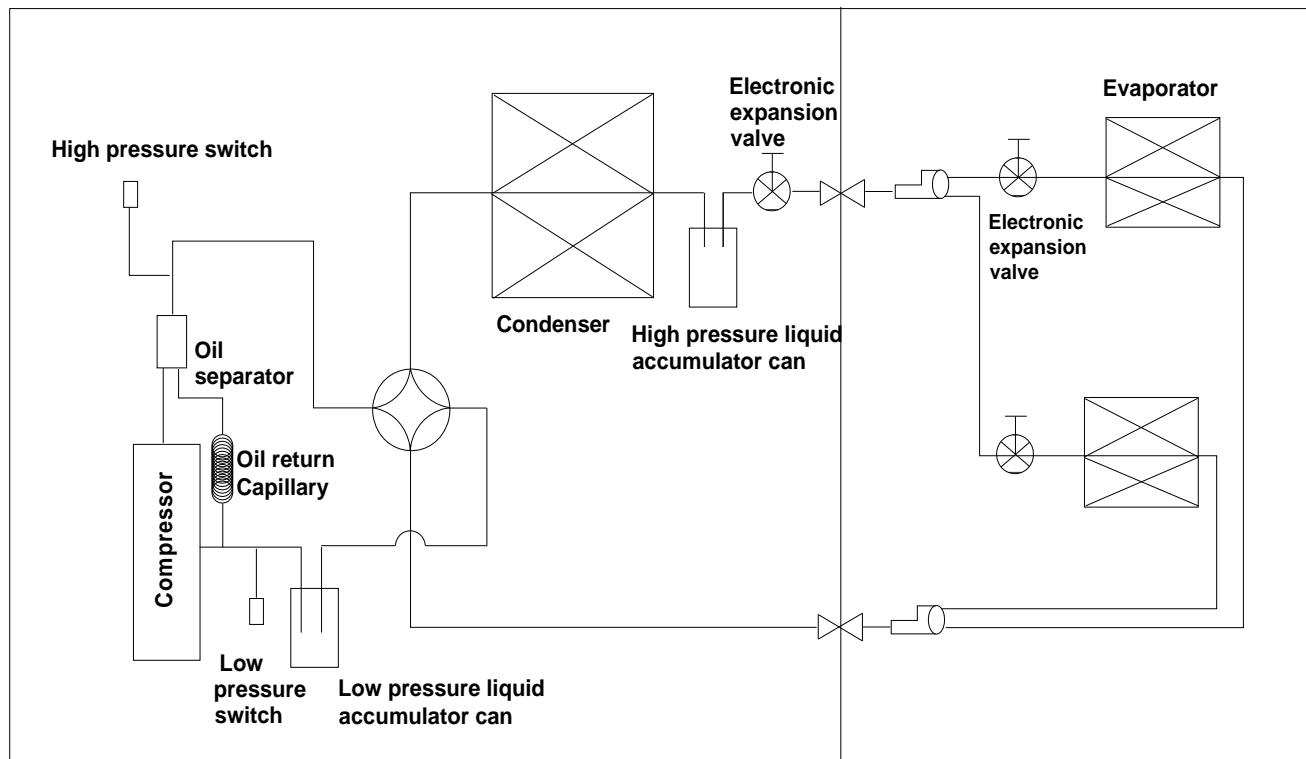
- Parallel connect the two units or above



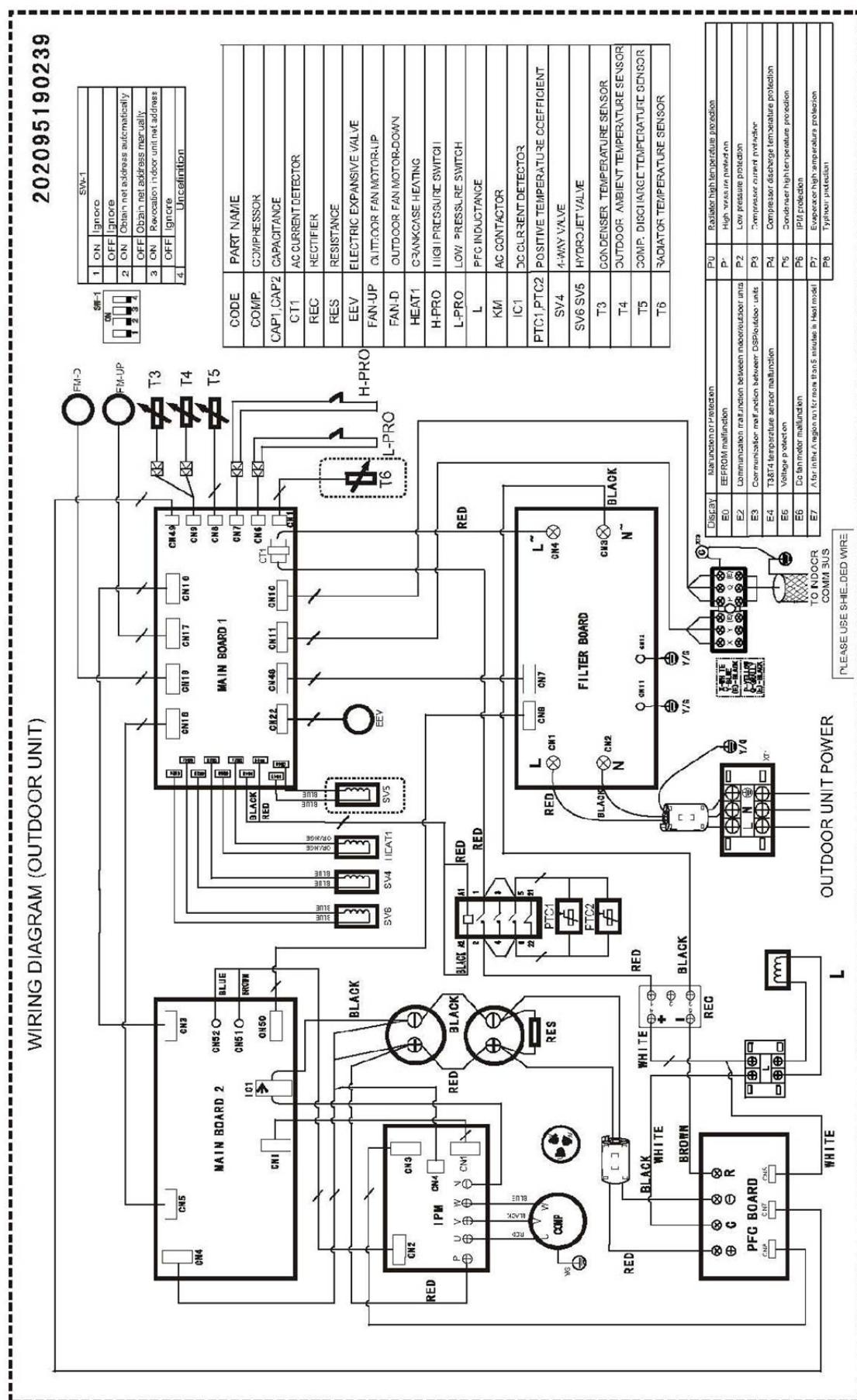
- Parallel connect the front with rear sides



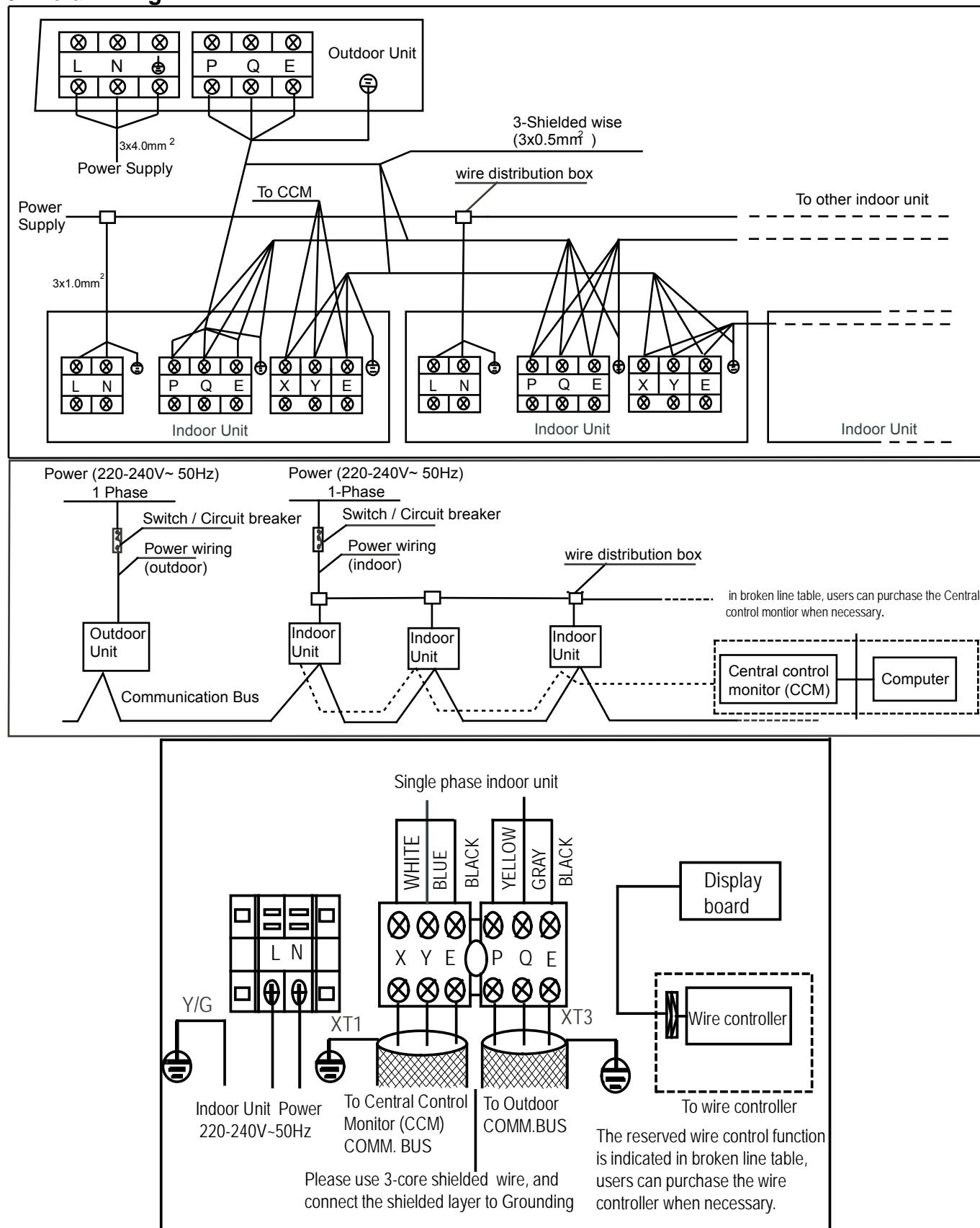
#### 4. Piping Diagrams



## 5. Wiring Diagrams



## 6. Field Wiring



## 7. Capacity Tables

### MVUH120A-VA1

#### Cooling

Combination (%) (Capacity index)	Outdoor Air temperature(°C DB)	Indoor temperature(°C WB)													
		14.00		16.00		18.00		19.00		20.00		22.00		24.00	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
130%	10	10.54	1.50	12.56	1.83	14.57	2.18	15.13	2.23	15.30	2.18	15.69	2.09	16.07	1.99
	12	10.54	1.52	12.56	1.87	14.57	2.22	14.91	2.21	15.13	2.17	15.47	2.07	15.86	2.04
	14	10.54	1.56	12.56	1.90	14.53	2.25	14.74	2.22	14.91	2.16	15.30	2.14	15.69	2.16
	16	10.54	1.58	12.56	1.94	14.36	2.24	14.53	2.20	14.70	2.23	15.09	2.25	15.47	2.27
	18	10.54	1.61	12.56	1.98	14.14	2.32	14.31	2.33	14.53	2.35	14.91	2.37	15.30	2.39
	20	10.54	1.65	12.56	2.11	13.93	2.44	14.14	2.45	14.31	2.46	14.70	2.48	15.09	2.51
	21	10.54	1.69	12.56	2.18	13.84	2.49	14.06	2.51	14.23	2.52	14.61	2.55	15.00	2.57
	23	10.54	1.81	12.56	2.34	13.67	2.61	13.84	2.62	14.01	2.63	14.40	2.66	14.78	2.69
	25	10.54	1.94	12.56	2.51	13.46	2.72	13.63	2.73	13.84	2.75	14.23	2.78	14.61	2.80
	27	10.54	2.07	12.56	2.68	13.29	2.83	13.46	2.85	13.63	2.86	14.01	2.90	14.40	2.93
	29	10.54	2.21	12.56	2.86	13.07	2.95	13.24	2.97	13.46	2.98	13.84	3.01	14.23	3.04
	31	10.54	2.36	12.51	3.03	12.86	3.07	13.07	3.08	13.24	3.10	13.63	3.13	14.01	3.17
	33	10.54	2.51	12.30	3.15	12.69	3.18	12.86	3.20	13.07	3.22	13.46	3.25	13.80	3.29
	35	10.54	2.68	12.09	3.26	12.47	3.30	12.69	3.32	12.86	3.33	13.24	3.37	13.63	3.41
	37	10.54	2.85	11.91	3.38	12.30	3.42	12.47	3.43	12.69	3.46	13.03	3.50	13.41	3.54
	39	10.54	3.03	11.70	3.41	12.09	3.53	12.30	3.55	12.47	3.57	12.86	3.61	13.24	3.66
	42	10.54	3.19	11.58	3.45	11.96	3.56	12.17	3.59	12.34	3.61	12.73	3.62	12.73	3.69
	44	10.54	3.35	11.46	3.48	11.83	3.58	12.05	3.62	12.09	3.62	12.27	3.63	12.43	3.71
	46	10.54	3.52	11.41	3.51	11.70	3.63	11.92	3.63	11.99	3.64	12.05	3.65	12.24	3.83
120%	10	9.73	1.37	11.57	1.67	13.46	1.98	14.40	2.15	15.09	2.24	15.43	2.15	15.77	2.07
	12	9.73	1.39	11.57	1.70	13.46	2.02	14.40	2.19	14.87	2.23	15.21	2.14	15.56	2.05
	14	9.73	1.42	11.57	1.73	13.46	2.06	14.40	2.23	14.66	2.21	15.04	2.13	15.39	2.14
	16	9.73	1.45	11.57	1.77	13.46	2.10	14.31	2.25	14.49	2.22	14.83	2.24	15.17	2.26
	18	9.73	1.47	11.57	1.80	13.46	2.17	14.10	2.32	14.27	2.33	14.61	2.35	15.00	2.37
	20	9.73	1.50	11.57	1.87	13.46	2.34	13.93	2.44	14.10	2.44	14.44	2.47	14.79	2.49
	21	9.73	1.52	11.57	1.94	13.46	2.42	13.80	2.49	13.97	2.50	14.36	2.52	14.70	2.55
	23	9.73	1.62	11.57	2.08	13.46	2.59	13.63	2.60	13.80	2.62	14.14	2.64	14.49	2.66
	25	9.73	1.73	11.57	2.23	13.24	2.71	13.41	2.72	13.59	2.73	13.97	2.75	14.31	2.78
	27	9.73	1.85	11.57	2.38	13.07	2.82	13.24	2.83	13.41	2.85	13.76	2.87	14.10	2.90
	29	9.73	1.97	11.57	2.54	12.86	2.93	13.03	2.95	13.20	2.96	13.54	2.99	13.93	3.02
	31	9.73	2.10	11.57	2.71	12.64	3.05	12.86	3.06	13.03	3.08	13.37	3.11	13.71	3.14
	33	9.73	2.24	11.57	2.89	12.47	3.16	12.64	3.18	12.81	3.19	13.16	3.23	13.50	3.26
	35	9.73	2.38	11.57	3.08	12.26	3.28	12.43	3.29	12.64	3.31	12.99	3.35	13.33	3.38
	37	9.73	2.54	11.57	3.28	12.09	3.39	12.26	3.41	12.43	3.43	12.77	3.46	13.11	3.50
	39	9.73	2.70	11.53	3.47	11.87	3.51	12.04	3.53	12.21	3.55	12.60	3.59	12.94	3.62
	42	9.73	2.80	11.40	3.50	11.75	3.54	11.92	3.56	12.09	3.58	12.48	3.60	12.45	3.66
	44	9.73	2.83	11.34	3.53	11.62	3.57	11.79	3.57	11.97	3.59	12.10	3.61	12.30	3.79
	46	9.73	2.86	11.28	3.57	11.52	3.61	11.67	3.63	11.88	3.64	11.98	3.62	12.20	3.82
110%	10	8.91	1.24	10.63	1.51	12.34	1.80	13.20	1.94	14.06	2.09	15.13	2.22	15.47	2.14
	12	8.91	1.27	10.63	1.54	12.34	1.83	13.20	1.98	14.06	2.13	14.96	2.21	15.26	2.13
	14	8.91	1.29	10.63	1.57	12.34	1.87	13.20	2.01	14.06	2.17	14.74	2.19	15.09	2.12
	16	8.91	1.31	10.63	1.60	12.34	1.90	13.20	2.05	14.06	2.21	14.57	2.22	14.87	2.24
	18	8.91	1.34	10.63	1.63	12.34	1.94	13.20	2.11	14.06	2.32	14.36	2.33	14.70	2.36
	20	8.91	1.36	10.63	1.66	12.34	2.05	13.20	2.27	13.84	2.43	14.19	2.45	14.49	2.47
	21	8.91	1.38	10.63	1.71	12.34	2.13	13.20	2.35	13.76	2.49	14.06	2.51	14.40	2.53
	23	8.91	1.44	10.63	1.84	12.34	2.28	13.20	2.52	13.54	2.60	13.89	2.62	14.19	2.65
	25	8.91	1.54	10.63	1.96	12.34	2.44	13.20	2.70	13.37	2.71	13.67	2.74	14.01	2.76
	27	8.91	1.64	10.63	2.10	12.34	2.61	12.99	2.82	13.16	2.83	13.50	2.85	13.80	2.88
	29	8.91	1.75	10.63	2.24	12.34	2.79	12.81	2.93	12.99	2.94	13.29	2.97	13.63	3.00
	31	8.91	1.86	10.63	2.39	12.34	2.98	12.60	3.04	12.77	3.06	13.12	3.08	13.41	3.11
	33	8.91	1.98	10.63	2.55	12.26	3.14	12.43	3.16	12.60	3.17	12.90	3.20	13.24	3.23
	35	8.91	2.11	10.63	2.71	12.04	3.25	12.21	3.27	12.39	3.29	12.69	3.32	13.03	3.35
	37	8.91	2.24	10.63	2.89	11.87	3.37	12.04	3.39	12.17	3.40	12.52	3.44	12.81	3.47
	39	8.91	2.38	10.63	3.08	11.66	3.49	11.83	3.50	12.00	3.52	12.30	3.56	12.64	3.59
	42	8.91	2.42	10.63	3.11	11.54	3.52	11.71	3.54	11.88	3.55	12.09	3.59	12.14	3.62

	44	8.91	2.45	10.63	3.14	11.41	3.55	11.58	3.57	11.76	3.59	11.98	3.60	12.01	3.76
	46	8.91	2.51	10.63	3.17	11.30	3.58	11.46	3.62	11.67	3.62	11.85	3.79	11.91	3.80
100%	10	8.10	1.12	9.64	1.36	11.23	1.61	12.00	1.74	12.77	1.87	14.36	2.14	15.17	2.21
	12	8.10	1.14	9.64	1.38	11.23	1.64	12.00	1.77	12.77	1.91	14.36	2.18	14.96	2.20
	14	8.10	1.16	9.64	1.41	11.23	1.67	12.00	1.80	12.77	1.94	14.36	2.22	14.79	2.19
	16	8.10	1.18	9.64	1.44	11.23	1.70	12.00	1.84	12.77	1.98	14.27	2.25	14.57	2.22
	18	8.10	1.20	9.64	1.46	11.23	1.73	12.00	1.87	12.77	2.02	14.10	2.32	14.40	2.34
	20	8.10	1.23	9.64	1.49	11.23	1.79	12.00	1.97	12.77	2.16	13.89	2.43	14.19	2.45
	21	8.10	1.24	9.64	1.51	11.23	1.85	12.00	2.04	12.77	2.24	13.80	2.49	14.10	2.51
	23	8.10	1.27	9.64	1.61	11.23	1.98	12.00	2.19	12.77	2.40	13.63	2.60	13.89	2.62
	25	8.10	1.35	9.64	1.72	11.23	2.12	12.00	2.34	12.77	2.57	13.41	2.72	13.71	2.74
	27	8.10	1.45	9.64	1.83	11.23	2.27	12.00	2.51	12.77	2.75	13.20	2.83	13.50	2.86
	29	8.10	1.54	9.64	1.95	11.23	2.42	12.00	2.68	12.73	2.92	13.03	2.95	13.33	2.97
	31	8.10	1.64	9.64	2.08	11.23	2.58	12.00	2.86	12.56	3.04	12.81	3.06	13.11	3.09
	33	8.10	1.74	9.64	2.22	11.23	2.76	12.00	3.05	12.34	3.15	12.64	3.18	12.94	3.21
	35	8.10	1.85	9.64	2.36	11.23	2.94	12.00	3.25	12.13	3.26	12.43	3.29	12.73	3.32
	37	8.10	1.97	9.64	2.51	11.23	3.13	11.78	3.36	11.96	3.38	12.26	3.41	12.51	3.44
	39	8.10	2.09	9.64	2.67	11.23	3.33	11.61	3.48	11.74	3.50	12.04	3.53	12.34	3.56
	42	8.10	2.22	9.64	2.80	11.23	3.50	11.37	3.51	11.62	3.57	11.76	3.61	12.10	3.66
	44	8.10	2.35	9.64	2.93	11.23	3.54	11.13	3.58	11.51	3.60	12.04	3.66	11.79	3.69
	46	8.10	2.48	9.64	3.06	11.23	3.62	10.89	3.61	11.50	3.70	11.56	3.72	11.62	3.76
90%	10	7.29	1.00	8.70	1.21	10.11	1.43	10.80	1.54	11.49	1.66	12.90	1.89	14.31	2.13
	12	7.29	1.02	8.70	1.23	10.11	1.45	10.80	1.57	11.49	1.69	12.90	1.93	14.31	2.17
	14	7.29	1.04	8.70	1.25	10.11	1.48	10.80	1.60	11.49	1.72	12.90	1.96	14.31	2.21
	16	7.29	1.06	8.70	1.27	10.11	1.51	10.80	1.63	11.49	1.75	12.90	2.00	14.27	2.25
	18	7.29	1.07	8.70	1.30	10.11	1.54	10.80	1.66	11.49	1.79	12.90	2.04	14.10	2.32
	20	7.29	1.09	8.70	1.33	10.11	1.57	10.80	1.69	11.49	1.85	12.90	2.19	13.89	2.43
	21	7.29	1.10	8.70	1.34	10.11	1.59	10.80	1.75	11.49	1.92	12.90	2.27	13.80	2.49
	23	7.29	1.13	8.70	1.39	10.11	1.71	10.80	1.88	11.49	2.06	12.90	2.44	13.59	2.60
	25	7.29	1.19	8.70	1.49	10.11	1.83	10.80	2.01	11.49	2.20	12.90	2.61	13.41	2.72
	27	7.29	1.26	8.70	1.59	10.11	1.95	10.80	2.15	11.49	2.35	12.90	2.79	13.20	2.83
	29	7.29	1.34	8.70	1.69	10.11	2.08	10.80	2.29	11.49	2.51	12.77	2.92	13.03	2.94
	31	7.29	1.43	8.70	1.80	10.11	2.22	10.80	2.44	11.49	2.68	12.56	3.04	12.81	3.06
	33	7.29	1.52	8.70	1.91	10.11	2.37	10.80	2.61	11.49	2.86	12.39	3.15	12.64	3.18
	35	7.29	1.61	8.70	2.04	10.11	2.52	10.80	2.78	11.49	3.05	12.17	3.27	12.43	3.29
	37	7.29	1.71	8.70	2.16	10.11	2.68	10.80	2.96	11.49	3.25	11.96	3.38	12.26	3.41
	39	7.29	1.81	8.70	2.30	10.11	2.85	10.80	3.15	11.49	3.46	11.79	3.50	12.04	3.53
	42	7.29	1.90	8.70	2.44	10.11	2.99	10.80	3.26	11.49	3.49	11.68	3.62	11.94	3.64
	44	7.29	2.04	8.70	2.58	10.11	3.13	10.80	3.37	11.49	3.62	11.61	3.65	11.78	3.69
	46	7.29	2.15	8.70	2.69	10.11	3.24	10.80	3.48	11.49	3.69	11.55	3.69	11.57	3.73
80%	10	6.47	0.89	7.71	1.06	8.96	1.25	9.60	1.35	10.24	1.45	11.49	1.65	12.73	1.86
	12	6.47	0.90	7.71	1.08	8.96	1.27	9.60	1.38	10.24	1.48	11.49	1.68	12.73	1.90
	14	6.47	0.92	7.71	1.10	8.96	1.30	9.60	1.40	10.24	1.50	11.49	1.71	12.73	1.93
	16	6.47	0.93	7.71	1.12	8.96	1.32	9.60	1.42	10.24	1.53	11.49	1.75	12.73	1.97
	18	6.47	0.95	7.71	1.14	8.96	1.35	9.60	1.45	10.24	1.56	11.49	1.78	12.73	2.01
	20	6.47	0.97	7.71	1.17	8.96	1.38	9.60	1.48	10.24	1.59	11.49	1.85	12.73	2.15
	21	6.47	0.98	7.71	1.17	8.96	1.39	9.60	1.50	10.24	1.63	11.49	1.91	12.73	2.23
	23	6.47	0.99	7.71	1.20	8.96	1.45	9.60	1.59	10.24	1.74	11.49	2.05	12.73	2.39
	25	6.47	1.02	7.71	1.27	8.96	1.55	9.60	1.70	10.24	1.86	11.49	2.19	12.73	2.55
	27	6.47	1.09	7.71	1.36	8.96	1.66	9.60	1.82	10.24	1.98	11.49	2.34	12.73	2.73
	29	6.47	1.16	7.71	1.45	8.96	1.77	9.60	1.94	10.24	2.12	11.49	2.50	12.73	2.92
	31	6.47	1.23	7.71	1.54	8.96	1.88	9.60	2.06	10.24	2.26	11.49	2.67	12.51	3.04
	33	6.47	1.31	7.71	1.63	8.96	2.00	9.60	2.20	10.24	2.40	11.49	2.85	12.34	3.15
	35	6.47	1.39	7.71	1.74	8.96	2.13	9.60	2.34	10.24	2.56	11.49	3.04	12.13	3.26
	37	6.47	1.47	7.71	1.84	8.96	2.26	9.60	2.49	10.24	2.73	11.49	3.24	11.96	3.38
	39	6.47	1.56	7.71	1.97	8.96	2.41	9.60	2.65	10.24	2.90	11.49	3.45	11.74	3.50
	42	6.47	1.61	7.71	1.99	8.96	2.46	9.60	2.74	10.24	2.97	11.49	3.56	11.65	3.58
	44	6.47	1.68	7.71	2.01	8.96	2.50	9.60	2.79	10.24	3.02	11.49	3.59	11.55	3.61
	46	6.47	1.70	7.71	2.04	8.96	2.55	9.60	2.86	10.24	3.08	11.49	3.64	11.45	3.70
70%	10	5.66	0.78	6.77	0.93	7.84	1.08	8.40	1.17	8.96	1.25	10.03	1.42	11.14	1.59
	12	5.66	0.79	6.77	0.94	7.84	1.10	8.40	1.19	8.96	1.27	10.03	1.45	11.14	1.63
	14	5.66	0.81	6.77	0.96	7.84	1.12	8.40	1.20	8.96	1.29	10.03	1.47	11.14	1.66

	16	5.66	0.82	6.77	0.98	7.84	1.14	8.40	1.23	8.96	1.32	10.03	1.50	11.14	1.69
	18	5.66	0.83	6.77	0.99	7.84	1.17	8.40	1.25	8.96	1.34	10.03	1.53	11.14	1.72
	20	5.66	0.85	6.77	1.01	7.84	1.19	8.40	1.27	8.96	1.37	10.03	1.56	11.14	1.77
	21	5.66	0.85	6.77	1.02	7.84	1.20	8.40	1.29	8.96	1.38	10.03	1.58	11.14	1.83
	23	5.66	0.87	6.77	1.04	7.84	1.22	8.40	1.33	8.96	1.45	10.03	1.70	11.14	1.96
	25	5.66	0.88	6.77	1.08	7.84	1.30	8.40	1.42	8.96	1.55	10.03	1.81	11.14	2.10
	27	5.66	0.94	6.77	1.15	7.84	1.39	8.40	1.52	8.96	1.65	10.03	1.94	11.14	2.24
	29	5.66	0.99	6.77	1.22	7.84	1.48	8.40	1.62	8.96	1.76	10.03	2.06	11.14	2.40
	31	5.66	1.05	6.77	1.30	7.84	1.57	8.40	1.72	8.96	1.87	10.03	2.20	11.14	2.55
	33	5.66	1.12	6.77	1.38	7.84	1.67	8.40	1.83	8.96	1.99	10.03	2.34	11.14	2.72
	35	5.66	1.18	6.77	1.46	7.84	1.77	8.40	1.94	8.96	2.12	10.03	2.50	11.14	2.90
	37	5.66	1.25	6.77	1.55	7.84	1.89	8.40	2.06	8.96	2.26	10.03	2.66	11.14	3.09
	39	5.66	1.32	6.77	1.64	7.84	2.00	8.40	2.19	8.96	2.40	10.03	2.83	11.14	3.29
	42	5.66	1.40	6.77	1.72	7.84	2.08	8.40	2.29	8.96	2.49	10.03	2.98	11.14	3.49
	44	5.66	1.49	6.77	1.82	7.84	2.14	8.40	2.39	8.96	2.59	10.03	3.12	11.14	3.61
	46	5.66	1.56	6.77	1.90	7.84	2.24	8.40	2.47	8.96	2.67	10.03	3.21	11.14	3.68
60%	10	4.84	0.68	5.79	0.80	6.73	0.92	7.20	0.99	7.67	1.06	8.61	1.20	9.56	1.34
	12	4.84	0.69	5.79	0.81	6.73	0.94	7.20	1.01	7.67	1.07	8.61	1.22	9.56	1.36
	14	4.84	0.70	5.79	0.82	6.73	0.95	7.20	1.02	7.67	1.09	8.61	1.24	9.56	1.39
	16	4.84	0.71	5.79	0.84	6.73	0.97	7.20	1.04	7.67	1.11	8.61	1.26	9.56	1.41
	18	4.84	0.72	5.79	0.85	6.73	0.99	7.20	1.06	7.67	1.13	8.61	1.28	9.56	1.44
	20	4.84	0.73	5.79	0.87	6.73	1.01	7.20	1.08	7.67	1.16	8.61	1.31	9.56	1.47
	21	4.84	0.74	5.79	0.87	6.73	1.02	7.20	1.09	7.67	1.16	8.61	1.32	9.56	1.48
	23	4.84	0.75	5.79	0.89	6.73	1.03	7.20	1.11	7.67	1.19	8.61	1.38	9.56	1.58
	25	4.84	0.76	5.79	0.90	6.73	1.07	7.20	1.16	7.67	1.26	8.61	1.47	9.56	1.69
	27	4.84	0.79	5.79	0.96	6.73	1.14	7.20	1.24	7.67	1.34	8.61	1.56	9.56	1.80
	29	4.84	0.84	5.79	1.02	6.73	1.22	7.20	1.32	7.67	1.43	8.61	1.67	9.56	1.92
	31	4.84	0.89	5.79	1.08	6.73	1.29	7.20	1.41	7.67	1.52	8.61	1.77	9.56	2.05
	33	4.84	0.94	5.79	1.14	6.73	1.37	7.20	1.49	7.67	1.62	8.61	1.89	9.56	2.18
	35	4.84	0.99	5.79	1.21	6.73	1.45	7.20	1.59	7.67	1.72	8.61	2.01	9.56	2.32
	37	4.84	1.05	5.79	1.28	6.73	1.54	7.20	1.68	7.67	1.83	8.61	2.14	9.56	2.47
	39	4.84	1.11	5.79	1.36	6.73	1.63	7.20	1.78	7.67	1.94	8.61	2.27	9.56	2.63
	42	4.84	1.16	5.79	1.44	6.73	1.71	7.20	1.88	7.67	2.04	8.61	2.41	9.56	2.79
	44	4.84	1.20	5.79	1.52	6.73	1.79	7.20	1.94	7.67	2.13	8.61	2.54	9.56	2.94
	46	4.84	1.27	5.79	1.59	6.73	1.86	7.20	2.02	7.67	2.24	8.61	2.63	9.56	3.10
50%	10	4.05	0.59	4.84	0.68	5.61	0.78	6.00	0.83	6.39	0.88	7.16	0.99	7.97	1.10
	12	4.05	0.59	4.84	0.69	5.61	0.79	6.00	0.84	6.39	0.89	7.16	1.00	7.97	1.12
	14	4.05	0.60	4.84	0.70	5.61	0.80	6.00	0.85	6.39	0.91	7.16	1.02	7.97	1.14
	16	4.05	0.61	4.84	0.71	5.61	0.81	6.00	0.87	6.39	0.92	7.16	1.04	7.97	1.16
	18	4.05	0.62	4.84	0.72	5.61	0.82	6.00	0.88	6.39	0.94	7.16	1.06	7.97	1.18
	20	4.05	0.63	4.84	0.73	5.61	0.84	6.00	0.89	6.39	0.95	7.16	1.07	7.97	1.20
	21	4.05	0.63	4.84	0.74	5.61	0.85	6.00	0.90	6.39	0.96	7.16	1.09	7.97	1.21
	23	4.05	0.64	4.84	0.74	5.61	0.86	6.00	0.92	6.39	0.98	7.16	1.10	7.97	1.24
	25	4.05	0.65	4.84	0.76	5.61	0.88	6.00	0.94	6.39	1.01	7.16	1.16	7.97	1.32
	27	4.05	0.66	4.84	0.79	5.61	0.92	6.00	1.00	6.39	1.07	7.16	1.24	7.97	1.41
	29	4.05	0.70	4.84	0.83	5.61	0.98	6.00	1.06	6.39	1.14	7.16	1.31	7.97	1.50
	31	4.05	0.74	4.84	0.88	5.61	1.04	6.00	1.13	6.39	1.21	7.16	1.40	7.97	1.60
	33	4.05	0.78	4.84	0.93	5.61	1.10	6.00	1.19	6.39	1.29	7.16	1.48	7.97	1.70
	35	4.05	0.82	4.84	0.99	5.61	1.16	6.00	1.26	6.39	1.36	7.16	1.58	7.97	1.80
	37	4.05	0.87	4.84	1.04	5.61	1.24	6.00	1.34	6.39	1.45	7.16	1.67	7.97	1.92
	39	4.05	0.92	4.84	1.10	5.61	1.31	6.00	1.41	6.39	1.53	7.16	1.77	7.97	2.04
	42	4.05	0.97	4.84	1.16	5.61	1.37	6.00	1.50	6.39	1.62	7.16	1.90	7.97	2.16
	44	4.05	1.02	4.84	1.23	5.61	1.43	6.00	1.59	6.39	1.66	7.16	2.03	7.97	2.29
	46	4.05	1.06	4.84	1.29	5.61	1.49	6.00	1.67	6.39	1.71	7.16	2.15	7.97	2.41

**Note:**

- is shown as reference
- In cooling mode, avoid the outdoor air temperature range from 42-46 degree C, when selecting the models
- The above table shows the average value of conditions may operate
- It is recommended to connect less than 130%

**Heating**

Combination (%) (Capacity index)	Outdoor Air temperature(°C DB)		Indoor temperature(°C WB)											
			16		18		20		21		22		24	
	°C DB	°C	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	TC	PI
130%	-19.8	-20	8.55	2.45	8.51	2.62	8.47	2.80	8.47	2.88	8.42	2.97	8.42	3.15
	-18.8	-19	8.67	2.51	8.63	2.68	8.63	2.85	8.59	2.93	8.59	3.01	8.55	3.19
	-16.7	-17	9.01	2.62	8.97	2.79	8.92	2.95	8.92	3.03	8.92	3.11	8.88	3.28
	-13.7	-15	9.39	2.74	9.35	2.90	9.30	3.06	9.30	3.14	9.26	3.22	9.26	3.38
	-11.8	-13	9.76	2.87	9.76	3.02	9.72	3.17	9.68	3.24	9.68	3.32	9.64	3.47
	-9.8	-11	10.23	2.99	10.18	3.14	10.14	3.28	10.14	3.35	10.14	3.42	10.10	3.57
	-9.5	-10	10.48	3.06	10.43	3.20	10.39	3.33	10.39	3.41	10.35	3.47	10.35	3.61
	-8.5	-9.1	10.68	3.11	10.64	3.24	10.64	3.38	10.60	3.45	10.60	3.52	10.56	3.66
	-7	-7.6	11.06	3.20	11.06	3.33	11.02	3.47	11.02	3.53	10.98	3.60	10.94	3.73
	-5	-5.6	11.65	3.32	11.61	3.45	11.56	3.57	11.56	3.64	11.52	3.70	11.52	3.82
	-3	-3.7	12.19	3.43	12.15	3.55	12.15	3.67	12.11	3.73	12.11	3.79	12.07	3.91
	0	-0.7	13.16	3.60	13.16	3.71	13.12	3.82	13.12	3.86	13.07	3.93	13.07	4.04
	3	2.2	14.20	3.74	14.16	3.85	14.12	3.95	14.12	4.00	14.12	4.06	14.08	4.16
	5	4.1	14.92	3.84	14.88	3.94	14.88	4.03	14.83	4.08	14.83	4.13	14.79	4.23
	7	6	15.67	3.93	15.63	4.02	15.63	4.11	15.59	4.16	15.59	4.20	14.96	4.04
	9	7.9	16.47	4.01	16.43	4.10	16.43	4.19	16.39	4.23	16.05	4.14	14.96	3.79
	11	9.8	17.31	4.09	17.27	4.17	17.18	4.23	16.59	4.06	16.05	3.89	14.96	3.57
	13	11.8	18.23	4.17	18.19	4.25	17.18	3.96	16.59	3.80	16.05	3.65	14.96	3.35
	15	13.7	19.11	4.24	18.27	4.02	17.18	3.73	16.59	3.59	16.05	3.44	14.96	3.16
120%	-19.8	-20	8.51	2.69	8.46	2.84	8.42	3.01	8.42	3.08	8.42	3.16	8.38	3.33
	-18.8	-19	8.63	2.74	8.59	2.89	8.59	3.05	8.55	3.13	8.55	3.21	8.51	3.37
	-16.7	-17	8.97	2.84	8.93	3.00	8.87	3.15	8.88	3.22	8.88	3.30	8.84	3.45
	-13.7	-15	9.35	2.96	9.30	3.10	9.26	3.24	9.26	3.32	9.26	3.39	9.22	3.54
	-11.8	-13	9.72	3.07	9.72	3.21	9.68	3.35	9.68	3.42	9.64	3.49	9.64	3.63
	-9.8	-11	10.18	3.19	10.14	3.32	10.14	3.45	10.10	3.52	10.10	3.58	10.06	3.72
	-9.5	-10	10.44	3.24	10.39	3.38	10.35	3.50	10.35	3.57	10.35	3.63	10.31	3.76
	-8.5	-9.1	10.64	3.29	10.60	3.42	10.60	3.55	10.56	3.61	10.56	3.68	10.52	3.80
	-7	-7.6	11.02	3.38	11.02	3.50	10.98	3.62	10.98	3.69	10.94	3.75	10.94	3.87
	-5	-5.6	11.61	3.49	11.57	3.61	11.52	3.72	11.52	3.78	11.52	3.84	11.48	3.95
	-3	-3.7	12.15	3.59	12.15	3.70	12.11	3.81	12.11	3.87	12.07	3.93	12.07	4.03
	0	-0.7	13.12	3.75	13.12	3.85	13.07	3.95	13.07	4.00	13.03	4.05	13.03	4.16
	3	2.2	14.16	3.88	14.12	3.98	14.12	4.07	14.08	4.12	14.08	4.17	13.79	4.15
	5	4.1	14.88	3.97	14.83	4.06	14.83	4.15	14.79	4.20	14.79	4.24	13.79	3.89
	7	6	15.63	4.05	15.63	4.14	15.59	4.22	15.34	4.16	14.83	3.99	13.79	3.66
	9	7.9	16.43	4.13	16.39	4.21	15.84	4.07	15.34	3.91	14.83	3.75	13.79	3.45
	11	9.8	17.27	4.20	16.85	4.13	15.84	3.83	15.34	3.68	14.83	3.53	13.79	3.25
	13	11.8	17.89	4.16	16.85	3.88	15.84	3.59	15.34	3.46	14.83	3.32	13.79	3.06
	15	13.7	17.89	3.92	16.85	3.65	15.84	3.39	15.34	3.26	14.83	3.13	13.79	2.88
110%	-19.8	-20	8.46	2.92	8.42	3.06	8.38	3.21	8.38	3.29	8.38	3.36	8.34	3.51
	-18.8	-19	8.59	2.97	8.55	3.11	8.55	3.25	8.55	3.33	8.51	3.40	8.51	3.54
	-16.7	-17	8.93	3.06	8.88	3.20	9.01	3.34	8.84	3.41	8.84	3.48	8.80	3.62
	-13.7	-15	9.30	3.17	9.26	3.30	9.22	3.43	9.22	3.50	9.22	3.57	9.18	3.70
	-11.8	-13	9.68	3.28	9.68	3.40	9.64	3.53	9.64	3.59	9.60	3.66	9.60	3.79
	-9.8	-11	10.14	3.38	10.10	3.50	10.10	3.62	10.06	3.69	10.06	3.74	10.06	3.87
	-9.5	-10	10.39	3.43	10.35	3.55	10.31	3.67	10.31	3.73	10.31	3.79	10.27	3.91
	-8.5	-9.1	10.60	3.48	10.56	3.60	10.56	3.71	10.52	3.77	10.52	3.83	10.52	3.49
	-7	-7.6	10.98	3.56	10.98	3.67	10.94	3.78	10.94	3.84	10.94	3.89	10.90	4.01
	-5	-5.6	11.57	3.66	11.52	3.77	11.48	3.87	11.48	3.93	11.48	3.98	11.44	4.09
	-3	-3.7	12.11	3.75	12.11	3.85	12.07	3.96	12.07	4.01	12.03	4.06	12.03	4.16
	0	-0.7	13.07	3.89	13.07	3.99	13.03	4.08	13.03	4.13	13.03	4.18	12.66	4.10
	3	2.2	14.12	4.02	14.08	4.11	14.08	4.20	14.04	4.24	13.58	4.07	12.66	3.73
	5	4.1	14.83	4.10	14.83	4.19	14.54	4.15	14.04	3.98	13.58	3.82	12.66	3.51
	7	6	15.59	4.18	15.46	4.20	14.54	3.89	14.04	3.74	13.58	3.59	12.66	3.30
	9	7.9	16.38	4.25	15.46	3.95	14.54	3.66	14.04	3.52	13.58	3.38	12.66	3.11
	11	9.8	16.38	3.99	15.46	3.72	14.54	3.45	14.04	3.32	13.58	3.19	12.66	2.93
	13	11.8	16.38	3.74	15.46	3.49	14.54	3.24	14.04	3.12	13.58	3.00	12.66	2.76
	15	13.7	16.38	3.33	15.46	3.29	14.54	3.06	14.04	2.94	13.58	2.83	12.66	2.61
100%	-19.8	-20	8.42	3.15	8.38	3.29	8.38	3.42	8.34	3.49	8.34	3.55	8.30	3.69
	-18.8	-19	8.55	3.20	8.55	3.33	8.51	3.46	8.51	3.52	8.47	3.59	8.47	3.72
	-16.7	-17	8.88	3.29	8.84	3.41	8.84	3.54	8.80	3.60	8.80	3.66	8.80	3.79

	-13.7	-15	9.26	3.38	9.22	3.50	9.18	3.62	9.18	3.69	9.18	3.74	9.14	3.87
	-11.8	-13	9.64	3.48	9.64	3.59	9.60	3.71	9.60	3.77	9.60	3.83	9.55	3.94
	-9.8	-11	10.10	3.57	10.06	3.69	10.06	3.79	10.06	3.85	10.01	3.91	10.01	4.02
	-9.5	-10	10.35	3.62	10.31	3.73	10.31	3.84	10.27	3.89	10.27	3.95	10.22	4.06
	-8.5	-9.1	10.56	3.66	10.52	3.77	10.52	3.88	10.52	3.93	10.48	3.98	10.48	4.09
	-7	-7.6	10.94	3.74	10.94	3.84	10.90	3.94	10.90	3.99	10.90	4.04	10.85	4.15
	-5	-5.6	11.52	3.83	11.48	3.93	11.48	4.02	11.44	4.07	11.44	4.12	11.40	4.22
	-3	-3.7	12.07	3.92	12.07	3.56	12.03	4.10	12.03	4.15	12.03	4.19	11.52	4.02
	0	-0.7	13.03	4.04	13.03	4.13	12.99	4.21	12.78	4.15	12.36	3.97	11.52	3.65
	3	2.2	14.08	4.16	14.04	4.24	13.20	3.92	12.78	3.77	12.36	3.62	11.52	3.32
	5	4.1	14.79	4.24	14.04	3.98	13.20	3.69	12.78	3.55	12.36	3.41	11.52	3.13
	7	6	14.88	4.02	14.04	3.74	13.20	3.47	12.78	3.34	12.36	3.21	11.52	2.95
	9	7.9	14.88	3.78	14.04	3.52	13.20	3.27	12.78	3.10	12.36	3.02	11.52	2.79
	11	9.8	14.88	3.56	14.04	3.32	13.20	3.08	12.78	2.97	12.36	2.85	11.52	2.63
	13	11.8	14.88	3.34	14.04	3.12	13.20	2.90	12.78	2.79	12.36	2.69	11.52	2.48
	15	13.7	14.88	3.15	14.04	2.94	13.20	2.74	12.78	2.64	12.36	2.54	11.52	2.35
90%	-19.8	-20	8.37	3.39	8.32	3.51	8.32	3.63	8.28	3.69	8.28	3.75	8.28	3.87
	-18.8	-19	8.49	3.42	8.49	3.55	8.45	3.66	8.45	3.72	8.45	3.78	8.41	3.90
	-16.7	-17	8.83	3.51	8.78	3.62	8.78	3.74	8.78	3.79	8.74	3.85	8.74	3.96
	-13.7	-15	9.20	3.60	9.16	3.70	9.16	3.81	9.12	3.87	9.12	3.92	9.12	4.03
	-11.8	-13	9.58	3.68	9.58	3.79	9.54	3.89	9.54	3.94	9.54	3.99	9.50	4.10
	-9.8	-11	10.04	3.77	10.04	3.87	10.00	3.97	10.00	4.02	10.00	4.07	9.96	4.17
	-9.5	-10	10.29	3.81	10.25	3.91	10.25	4.01	10.21	4.06	10.21	4.11	10.21	4.20
	-8.5	-9.1	10.50	3.85	10.50	3.95	10.46	4.04	10.46	4.09	10.46	4.14	10.33	4.18
	-7	-7.6	10.88	3.92	10.88	4.01	10.83	4.10	10.83	4.15	10.83	4.19	10.33	3.99
	-5	-5.6	11.46	4.00	11.42	4.09	11.42	4.17	11.38	4.22	11.09	4.09	10.33	3.75
	-3	-3.7	12.01	4.08	12.01	4.16	11.88	4.18	11.46	4.01	11.09	3.85	10.33	3.53
	0	-0.7	13.01	4.20	12.63	4.09	11.88	3.79	11.46	3.64	11.09	3.50	10.33	3.21
	3	2.2	13.39	4.00	12.63	3.72	11.88	3.45	11.46	3.32	11.09	3.19	10.33	2.94
	5	4.1	13.39	3.76	12.63	3.50	11.88	3.25	11.46	3.13	11.09	3.01	10.33	2.77
	7	6	13.39	3.53	12.63	3.30	11.88	3.06	11.46	2.95	11.09	2.84	10.33	2.62
	9	7.9	13.39	3.33	12.63	3.10	11.88	2.89	11.46	2.78	11.09	2.68	10.33	2.47
	11	9.8	13.39	3.14	12.63	2.93	11.88	2.73	11.46	2.63	11.09	2.53	10.33	2.34
	13	11.8	13.39	2.95	12.63	2.76	11.88	2.57	11.46	2.48	11.09	2.39	10.33	2.21
	15	13.7	13.39	2.79	12.63	2.61	11.88	2.44	11.46	2.35	11.09	2.27	10.33	2.10
80%	-19.8	-20	8.34	3.62	8.30	3.73	8.30	3.83	8.30	3.89	8.25	3.94	8.25	4.05
	-18.8	-19	8.46	3.65	8.46	3.76	8.42	3.87	8.42	3.92	8.42	3.97	8.38	4.08
	-16.7	-17	8.80	3.73	8.76	3.83	8.76	3.93	8.76	3.98	8.76	4.03	8.72	4.13
	-13.7	-15	9.18	3.81	9.14	3.90	9.14	4.00	9.14	4.05	9.09	4.10	9.09	4.20
	-11.8	-13	9.55	3.88	9.55	3.98	9.51	4.07	9.51	4.11	9.51	4.16	9.22	4.05
	-9.8	-11	10.02	3.96	10.02	4.05	9.97	4.14	9.97	4.18	9.89	4.17	9.22	3.83
	-9.5	-10	10.27	4.00	10.22	4.09	10.23	4.17	10.23	4.22	9.89	4.05	9.22	3.71
	-8.5	-9.1	10.48	4.04	9.74	4.12	10.43	4.20	10.23	4.11	9.89	3.94	9.22	3.61
	-7	-7.6	10.85	4.10	10.85	4.18	10.56	4.09	10.23	3.92	9.89	3.77	9.22	3.46
	-5	-5.6	11.44	4.17	11.23	4.15	10.56	3.84	10.23	3.69	9.89	3.54	9.22	3.25
	-3	-3.7	11.90	4.19	11.23	3.90	10.56	3.61	10.23	3.48	9.89	3.34	9.22	3.07
	0	-0.7	11.90	3.80	11.23	3.54	10.56	3.29	10.23	3.17	9.89	3.04	9.22	2.80
	3	2.2	11.90	3.47	11.23	3.23	10.56	3.01	10.23	2.89	9.89	2.78	9.22	2.57
	5	4.1	11.90	3.26	11.23	3.05	10.56	2.83	10.23	2.73	9.89	2.63	9.22	2.43
	7	6	11.90	3.07	11.23	2.88	10.56	2.68	10.23	2.58	9.89	2.49	9.22	2.30
	9	7.9	11.90	2.90	11.23	2.71	10.56	2.53	10.23	2.44	9.89	2.35	9.22	2.18
	11	9.8	11.90	2.74	11.23	2.56	10.56	2.39	10.23	2.31	9.89	2.23	9.22	2.06
	13	11.8	11.90	2.58	11.23	2.42	10.56	2.26	10.23	2.18	9.89	2.10	9.22	1.95
	15	13.7	11.90	2.44	11.23	2.29	10.56	2.14	10.23	2.07	9.89	2.00	9.22	1.86
70%	-19.8	-20	8.28	3.86	8.24	3.95	8.24	4.04	8.24	4.09	8.24	4.14	8.03	4.09
	-18.8	-19	8.40	3.89	8.40	3.98	8.36	4.07	8.36	4.11	8.36	4.16	8.03	4.01
	-16.7	-17	8.74	3.95	8.74	4.04	8.70	4.13	8.70	4.17	8.61	3.72	8.03	3.82
	-13.7	-15	9.11	4.02	9.07	4.11	9.07	4.19	8.91	4.13	8.61	3.96	8.03	3.63
	-11.8	-13	9.49	4.09	9.49	4.17	9.24	4.07	8.91	3.91	8.61	3.75	8.03	3.44
	-9.8	-11	9.95	4.15	9.82	4.15	9.24	3.84	8.91	3.70	8.61	3.55	8.03	3.26
	-9.5	-10	10.20	4.19	9.82	4.03	9.24	3.73	8.91	3.59	8.61	3.45	8.03	3.17
	-8.5	-9.1	10.41	4.21	9.82	3.92	9.24	3.63	8.91	3.49	8.61	3.36	8.03	3.09
	-7	-7.6	10.41	4.02	9.82	3.74	9.24	3.47	8.91	3.34	8.61	3.21	8.03	2.96
	-5	-5.6	10.41	3.78	9.82	3.52	9.24	3.27	8.91	3.15	8.61	3.72	8.03	2.79
	-3	-3.7	10.41	3.56	9.82	3.32	9.24	3.09	8.91	2.97	8.61	2.86	8.03	2.64

	0	-0.7	10.41	3.24	9.82	3.03	9.24	2.82	8.91	2.71	8.61	2.61	8.03	2.42
	3	2.2	10.41	2.96	9.82	2.77	9.24	2.58	8.91	2.49	8.61	2.40	8.03	2.22
	5	4.1	10.41	2.79	9.82	2.61	9.24	2.44	8.91	2.35	8.61	2.27	8.03	2.10
	7	6	10.41	2.64	9.82	2.47	9.24	2.31	8.91	2.23	8.61	2.15	8.03	1.99
	9	7.9	10.41	2.50	9.82	2.34	9.24	2.19	8.91	2.11	8.61	2.04	8.03	1.89
	11	9.8	10.41	2.36	9.82	2.21	9.24	2.07	8.91	2.00	8.61	1.93	8.03	1.79
	13	11.8	10.41	2.23	9.82	2.10	9.24	1.96	8.91	1.90	8.61	1.83	8.03	1.70
	15	13.7	10.41	2.11	9.82	1.99	9.24	1.86	8.91	1.80	8.61	1.74	8.03	1.62
60%	-19.8	-20	8.26	4.09	8.21	4.17	7.92	4.01	7.67	3.85	7.42	3.70	6.91	3.39
	-18.8	-19	8.38	4.12	8.38	4.20	7.92	3.92	7.67	3.77	7.42	3.62	6.91	3.32
	-16.7	-17	8.72	4.17	8.42	4.04	7.92	3.74	7.67	3.60	7.42	3.46	6.91	3.18
	-13.7	-15	8.93	4.13	8.42	3.84	7.92	3.56	7.67	3.42	7.42	3.29	6.91	3.02
	-11.8	-13	8.93	3.91	8.42	3.64	7.92	3.38	7.67	3.25	7.42	3.12	6.91	2.89
	-9.8	-11	8.93	3.69	8.42	3.44	7.92	3.19	7.67	3.07	7.42	2.96	6.91	2.73
	-9.5	-10	8.93	3.59	8.42	3.34	7.92	3.10	7.67	2.99	7.42	2.87	6.91	2.65
	-8.5	-9.1	8.93	3.49	8.42	3.26	7.92	3.03	7.67	2.92	7.42	2.80	6.91	2.59
	-7	-7.6	8.93	3.34	8.42	3.12	7.92	2.90	7.67	2.79	7.42	2.69	6.91	2.48
	-5	-5.6	8.93	3.15	8.42	2.94	7.92	2.74	7.67	2.64	7.42	2.54	6.91	2.35
	-3	-3.7	8.93	2.97	8.42	2.78	7.92	2.59	7.67	2.50	7.42	2.40	6.91	2.22
	0	-0.7	8.93	2.71	8.42	2.54	7.92	2.37	7.67	2.29	7.42	2.20	6.91	2.04
	3	2.2	8.93	2.49	8.42	2.33	7.92	2.18	7.67	2.10	7.42	2.03	6.91	1.88
	5	4.1	8.93	2.35	8.42	2.21	7.92	2.06	7.67	2.00	7.42	1.92	6.91	1.79
	7	6	8.93	2.23	8.42	2.09	7.92	1.96	7.67	1.89	7.42	1.83	6.91	1.70
	9	7.9	8.93	2.11	8.42	1.98	7.92	1.86	7.67	1.80	7.42	1.73	6.91	1.62
	11	9.8	8.93	2.00	8.42	1.88	7.92	1.77	7.67	1.71	7.42	1.65	6.91	1.54
	13	11.8	8.93	1.89	8.42	1.78	7.92	1.68	7.67	1.62	7.42	1.57	6.91	1.46
	15	13.7	8.93	1.80	8.42	1.69	7.92	1.60	7.67	1.55	7.42	1.50	6.91	1.40
50%	-19.8	-20	7.44	3.72	7.02	3.47	6.60	3.22	6.35	3.10	6.14	2.98	5.72	2.74
	-18.8	-19	7.44	3.64	7.02	3.39	6.60	3.15	6.35	3.03	6.14	2.92	5.72	2.69
	-16.7	-17	7.44	3.47	7.02	3.24	6.60	3.01	6.35	2.90	6.14	2.79	5.72	2.58
	-13.7	-15	7.44	3.31	7.02	3.09	6.60	2.87	6.35	2.77	6.14	2.66	5.72	2.46
	-11.8	-13	7.44	3.14	7.02	2.93	6.60	2.73	6.35	2.63	6.14	2.53	5.72	2.34
	-9.8	-11	7.44	2.97	7.02	2.78	6.60	2.59	6.35	2.50	6.14	2.41	5.72	2.23
	-9.5	-10	7.44	2.89	7.02	2.70	6.60	2.52	6.35	2.43	6.14	2.34	5.72	2.17
	-8.5	-9.1	7.44	2.82	7.02	2.64	6.60	2.46	6.35	2.37	6.14	2.29	5.72	2.12
	-7	-7.6	7.44	2.70	7.02	2.53	6.60	2.36	6.35	2.28	6.14	2.20	5.72	2.04
	-5	-5.6	7.44	2.55	7.02	2.39	6.60	2.24	6.35	2.16	6.14	2.08	5.72	1.93
	-3	-3.7	7.44	2.42	7.02	2.27	6.60	2.12	6.35	2.05	6.14	1.97	5.72	1.83
	0	-0.7	7.44	2.22	7.02	2.08	6.60	1.95	6.35	1.88	6.14	1.82	5.72	1.69
	3	2.2	7.44	2.04	7.02	1.92	6.60	1.80	6.35	1.74	6.14	1.68	5.72	1.57
	5	4.1	7.44	1.94	7.02	1.82	6.60	1.71	6.35	1.65	6.14	1.60	5.72	1.49
	7	6	7.44	1.84	7.02	1.73	6.60	1.63	6.35	1.57	6.14	1.52	5.72	1.42
	9	7.9	7.44	1.74	7.02	1.64	6.60	1.55	6.35	1.50	6.14	1.45	5.72	1.36
	11	9.8	7.44	1.66	7.02	1.56	6.60	1.47	6.35	1.43	6.14	1.38	5.72	1.29
	13	11.8	7.44	1.58	7.02	1.49	6.60	1.40	6.35	1.36	6.14	1.32	5.72	1.23
	15	13.7	7.44	1.50	7.02	1.42	6.60	1.34	6.35	1.30	6.14	1.26	5.72	1.18

## Note:

- is shown as reference
- In heating mode, avoid the outdoor air temperature range from -15 to -20 degree C, when selecting the models
- The above table shows the average value of conditions may operate
- It is recommended to connect less than 130%

**MVUH140A-VA1****Cooling**

Combinati on (%) (Capacity index)	Outdoor Air temperatu re(°C DB)	Indoor temperature(°C WB)													
		14.00		16.00		18.00		19.00		20.00		22.00		24.00	
		TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
130%	10	12.3	1.82	14.6	2.23	17.0	2.65	17.65	2.70	17.85	2.65	18.30	2.54	18.7	2.42
	12	12.3	1.85	14.6	2.27	17.0	2.70	17.40	2.69	17.65	2.64	18.05	2.52	18.5	2.48
	14	12.3	1.89	14.6	2.31	16.9	2.73	17.20	2.70	17.40	2.62	17.85	2.60	18.3	2.62
	16	12.3	1.92	14.6	2.36	16.7	2.72	16.95	2.68	17.15	2.71	17.60	2.74	18.0	2.76
	18	12.3	1.96	14.6	2.41	16.5	2.82	16.70	2.84	16.95	2.85	17.40	2.88	17.8	2.91
	20	12.3	2.00	14.6	2.56	16.2	2.96	16.50	2.98	16.70	2.99	17.15	3.02	17.6	3.05
	21	12.3	2.05	14.6	2.65	16.1	3.03	16.40	3.05	16.60	3.06	17.05	3.09	17.5	3.12
	23	12.3	2.20	14.6	2.84	15.9	3.17	16.15	3.18	16.35	3.20	16.80	3.23	17.2	3.26
	25	12.3	2.35	14.6	3.05	15.7	3.31	15.90	3.32	16.15	3.34	16.60	3.38	17.0	3.41
	27	12.3	2.51	14.6	3.26	15.5	3.44	15.70	3.47	15.90	3.48	16.35	3.52	16.8	3.56
	29	12.3	2.68	14.6	3.48	15.2	3.58	15.45	3.60	15.70	3.63	16.15	3.66	16.6	3.70
	31	12.3	2.86	14.6	3.68	15.0	3.73	15.25	3.75	15.45	3.76	15.90	3.81	16.3	3.85
	33	12.3	3.05	14.3	3.82	14.8	3.86	15.00	3.89	15.25	3.91	15.70	3.95	16.1	3.99
	35	12.3	3.25	14.1	3.96	14.5	4.01	14.80	4.03	15.00	4.05	15.45	4.10	15.9	4.14
	37	12.3	3.46	13.9	4.10	14.3	4.15	14.55	4.17	14.80	4.20	15.20	4.25	15.6	4.30
	39	12.3	3.68	13.6	4.15	14.1	4.29	14.35	4.32	14.55	4.34	15.00	4.39	15.4	4.45
	42	12.3	3.88	13.5	4.19	13.9	4.33	14.20	4.36	14.40	4.38	14.85	4.40	14.8	4.49
	44	12.3	4.07	13.3	4.23	13.8	4.36	14.05	4.40	14.11	4.40	14.31	4.42	14.5	4.51
	46	12.3	4.27	13.3	4.27	13.6	4.41	13.91	4.41	13.99	4.42	14.06	4.43	14.2	4.65
120%	10	11.3	1.66	13.5	2.03	15.7	2.41	16.80	2.61	17.60	2.72	18.00	2.61	18.4	2.51
	12	11.3	1.69	13.5	2.07	15.7	2.46	16.80	2.66	17.35	2.70	17.75	2.60	18.1	2.50
	14	11.3	1.73	13.5	2.11	15.7	2.51	16.80	2.71	17.10	2.69	17.55	2.59	17.9	2.60
	16	11.3	1.76	13.5	2.15	15.7	2.56	16.70	2.73	16.90	2.69	17.30	2.72	17.7	2.74
	18	11.3	1.79	13.5	2.19	15.7	2.64	16.45	2.82	16.65	2.83	17.05	2.86	17.5	2.89
	20	11.3	1.83	13.5	2.28	15.7	2.84	16.25	2.96	16.45	2.97	16.85	3.00	17.2	3.02
	21	11.3	1.84	13.5	2.36	15.7	2.94	16.10	3.03	16.30	3.04	16.75	3.07	17.1	3.10
	23	11.3	1.97	13.5	2.53	15.7	3.15	15.90	3.16	16.10	3.18	16.50	3.21	16.9	3.24
	25	11.3	2.10	13.5	2.70	15.4	3.29	15.65	3.30	15.85	3.32	16.30	3.35	16.7	3.38
	27	11.3	2.25	13.5	2.89	15.2	3.42	15.45	3.44	15.65	3.46	16.05	3.49	16.4	3.52
	29	11.3	2.40	13.5	3.09	15.0	3.56	15.20	3.58	15.40	3.60	15.80	3.64	16.2	3.67
	31	11.3	2.56	13.5	3.30	14.7	3.71	15.00	3.72	15.20	3.74	15.60	3.78	16.0	3.82
	33	11.3	2.72	13.5	3.51	14.5	3.84	14.75	3.86	14.95	3.88	15.35	3.92	15.7	3.96
	35	11.3	2.90	13.5	3.75	14.3	3.98	14.50	4.00	14.75	4.02	15.15	4.07	15.5	4.11
	37	11.3	3.08	13.5	3.99	14.1	4.13	14.30	4.15	14.50	4.17	14.90	4.21	15.3	4.26
	39	11.3	3.28	13.4	4.22	13.8	4.26	14.05	4.29	14.25	4.31	14.70	4.36	15.1	4.40
	42	11.3	3.40	13.3	4.26	13.7	4.30	13.91	4.33	14.11	4.35	14.55	4.38	14.5	4.45
	44	11.3	3.44	13.2	4.30	13.5	4.34	13.76	4.34	13.96	4.36	14.12	4.39	14.3	4.60
	46	11.3	3.48	13.1	4.34	13.4	4.38	13.62	4.41	13.86	4.42	13.97	4.40	14.2	4.64
110%	10	10.4	1.51	12.4	1.84	14.4	2.18	15.40	2.36	16.40	2.54	17.65	2.69	18.0	2.60
	12	10.4	1.54	12.4	1.87	14.4	2.23	15.40	2.41	16.40	2.59	17.45	2.68	17.8	2.59
	14	10.4	1.57	12.4	1.91	14.4	2.27	15.40	2.45	16.40	2.64	17.20	2.67	17.6	2.58
	16	10.4	1.59	12.4	1.94	14.4	2.31	15.40	2.50	16.40	2.69	17.00	2.70	17.3	2.73
	18	10.4	1.62	12.4	1.98	14.4	2.36	15.40	2.57	16.40	2.82	16.75	2.84	17.1	2.86
	20	10.4	1.66	12.4	2.02	14.4	2.50	15.40	2.76	16.15	2.95	16.55	2.98	16.9	3.00
	21	10.4	1.67	12.4	2.08	14.4	2.59	15.40	2.86	16.05	3.02	16.40	3.05	16.8	3.07
	23	10.4	1.75	12.4	2.23	14.4	2.77	15.40	3.07	15.80	3.16	16.20	3.19	16.5	3.22
	25	10.4	1.87	12.4	2.38	14.4	2.97	15.40	3.28	15.60	3.30	15.95	3.33	16.3	3.35
	27	10.4	1.99	12.4	2.55	14.4	3.17	15.15	3.42	15.35	3.43	15.75	3.47	16.1	3.50
	29	10.4	2.12	12.4	2.72	14.4	3.39	14.95	3.56	15.15	3.58	15.50	3.61	15.9	3.64
	31	10.4	2.26	12.4	2.90	14.4	3.62	14.70	3.70	14.90	3.72	15.30	3.75	15.6	3.79
	33	10.4	2.41	12.4	3.09	14.3	3.82	14.50	3.84	14.70	3.85	15.05	3.89	15.4	3.93
	35	10.4	2.56	12.4	3.30	14.0	3.96	14.25	3.98	14.45	4.00	14.80	4.04	15.2	4.07
	37	10.4	2.73	12.4	3.51	13.8	4.10	14.05	4.12	14.20	4.14	14.60	4.18	14.9	4.22
	39	10.4	2.90	12.4	3.74	13.6	4.24	13.80	4.26	14.00	4.28	14.35	4.32	14.7	4.37
	42	10.4	2.94	12.4	3.78	13.4	4.28	13.66	4.30	13.86	4.32	14.11	4.36	14.1	4.41
	44	10.4	2.98	12.4	3.82	13.3	4.32	13.52	4.34	13.72	4.36	13.98	4.37	14.0	4.56
	46	10.4	3.05	12.4	3.86	13.1	4.36	13.37	4.40	13.61	4.40	13.82	4.60	13.9	4.61
100%	10	9.45	1.36	11.2	1.65	13.1	1.95	14.00	2.11	14.90	2.27	16.75	2.60	17.7	2.69
	12	9.45	1.38	11.2	1.68	13.1	1.99	14.00	2.15	14.90	2.32	16.75	2.65	17.4	2.67

	14	9.45	1.41	11.2	1.71	13.1	2.03	14.00	2.19	14.90	2.36	16.75	2.70	17.2	2.66
	16	9.45	1.44	11.2	1.75	13.1	2.07	14.00	2.24	14.90	2.41	16.65	2.73	17.0	2.70
	18	9.45	1.46	11.2	1.78	13.1	2.11	14.00	2.28	14.90	2.45	16.45	2.82	16.8	2.84
	20	9.45	1.49	11.2	1.82	13.1	2.17	14.00	2.40	14.90	2.63	16.20	2.95	16.5	2.98
	21	9.45	1.51	11.2	1.83	13.1	2.25	14.00	2.48	14.90	2.72	16.10	3.02	16.4	3.05
	23	9.45	1.54	11.2	1.95	13.1	2.41	14.00	2.66	14.90	2.92	15.90	3.16	16.2	3.19
	25	9.45	1.64	11.2	2.09	13.1	2.58	14.00	2.85	14.90	3.12	15.65	3.30	16.0	3.33
	27	9.45	1.76	11.2	2.23	13.1	2.76	14.00	3.05	14.90	3.34	15.40	3.44	15.7	3.47
	29	9.45	1.87	11.2	2.37	13.1	2.94	14.00	3.25	14.85	3.55	15.20	3.58	15.5	3.61
	31	9.45	1.99	11.2	2.53	13.1	3.14	14.00	3.47	14.65	3.69	14.95	3.72	15.3	3.75
	33	9.45	2.11	11.2	2.70	13.1	3.35	14.00	3.71	14.40	3.83	14.75	3.86	15.1	3.90
	35	9.45	2.25	11.2	2.87	13.1	3.57	14.00	3.95	14.15	3.97	14.50	4.00	14.8	4.04
	37	9.45	2.39	11.2	3.06	13.1	3.81	13.75	4.09	13.95	4.11	14.30	4.15	14.6	4.18
	39	9.45	2.54	11.2	3.25	13.1	4.05	13.55	4.23	13.70	4.25	14.05	4.29	14.4	4.33
	42	9.45	2.70	11.2	3.41	13.1	4.25	13.27	4.27	13.56	4.34	13.73	4.39	14.1	4.45
	44	9.45	2.86	11.2	3.56	13.1	4.31	12.99	4.35	13.43	4.37	14.05	4.44	13.7	4.49
	46	9.45	3.01	11.2	3.72	13.1	4.39	12.71	4.38	13.42	4.49	13.49	4.52	13.5	4.57
90%	10	8.50	1.22	10.1	1.47	11.8	1.74	12.60	1.87	13.40	2.01	15.05	2.30	16.7	2.59
	12	8.50	1.24	10.1	1.50	11.8	1.77	12.60	1.91	13.40	2.05	15.05	2.34	16.7	2.64
	14	8.50	1.26	10.1	1.52	11.8	1.80	12.60	1.94	13.40	2.09	15.05	2.38	16.7	2.69
	16	8.50	1.28	10.1	1.55	11.8	1.84	12.60	1.98	13.40	2.13	15.05	2.43	16.6	2.74
	18	8.50	1.30	10.1	1.58	11.8	1.87	12.60	2.02	13.40	2.17	15.05	2.48	16.4	2.82
	20	8.50	1.33	10.1	1.62	11.8	1.91	12.60	2.06	13.40	2.25	15.05	2.67	16.2	2.95
	21	8.50	1.34	10.1	1.63	11.8	1.94	12.60	2.13	13.40	2.33	15.05	2.76	16.1	3.02
	23	8.50	1.37	10.1	1.69	11.8	2.08	12.60	2.28	13.40	2.50	15.05	2.96	15.8	3.16
	25	8.50	1.44	10.1	1.81	11.8	2.22	12.60	2.44	13.40	2.67	15.05	3.17	15.6	3.30
	27	8.50	1.53	10.1	1.93	11.8	2.37	12.60	2.61	13.40	2.86	15.05	3.40	15.4	3.44
	29	8.50	1.63	10.1	2.05	11.8	2.53	12.60	2.78	13.40	3.06	14.90	3.55	15.2	3.58
	31	8.50	1.74	10.1	2.19	11.8	2.69	12.60	2.97	13.40	3.26	14.65	3.69	14.9	3.72
	33	8.50	1.84	10.1	2.33	11.8	2.87	12.60	3.17	13.40	3.48	14.45	3.83	14.7	3.86
	35	8.50	1.96	10.1	2.48	11.8	3.06	12.60	3.37	13.40	3.70	14.20	3.97	14.5	4.00
	37	8.50	2.08	10.1	2.63	11.8	3.26	12.60	3.59	13.40	3.95	13.95	4.11	14.3	4.14
	39	8.50	2.20	10.1	2.80	11.8	3.47	12.60	3.83	13.40	4.21	13.75	4.25	14.0	4.29
	42	8.50	2.31	10.1	2.97	11.8	3.63	12.60	3.96	13.40	4.24	13.62	4.40	13.9	4.42
	44	8.50	2.47	10.1	3.14	11.8	3.80	12.60	4.10	13.40	4.40	13.55	4.44	13.7	4.49
	46	8.50	2.61	10.1	3.27	11.8	3.94	12.60	4.23	13.40	4.48	13.47	4.49	13.5	4.54
80%	10	7.55	1.08	9.00	1.29	10.4	1.52	11.20	1.64	11.95	1.76	13.40	2.01	14.8	2.26
	12	7.55	1.10	9.00	1.31	10.4	1.55	11.20	1.67	11.95	1.79	13.40	2.04	14.8	2.31
	14	7.55	1.12	9.00	1.34	10.4	1.58	11.20	1.70	11.95	1.83	13.40	2.08	14.8	2.35
	16	7.55	1.13	9.00	1.36	10.4	1.61	11.20	1.73	11.95	1.86	13.40	2.12	14.8	2.39
	18	7.55	1.16	9.00	1.39	10.4	1.64	11.20	1.77	11.95	1.90	13.40	2.17	14.8	2.44
	20	7.55	1.18	9.00	1.42	10.4	1.67	11.20	1.80	11.95	1.93	13.40	2.25	14.8	2.61
	21	7.55	1.19	9.00	1.43	10.4	1.69	11.20	1.82	11.95	1.98	13.40	2.33	14.8	2.70
	23	7.55	1.21	9.00	1.46	10.4	1.77	11.20	1.94	11.95	2.11	13.40	2.49	14.8	2.90
	25	7.55	1.25	9.00	1.55	10.4	1.89	11.20	2.07	11.95	2.26	13.40	2.67	14.8	3.10
	27	7.55	1.33	9.00	1.65	10.4	2.01	11.20	2.21	11.95	2.41	13.40	2.85	14.8	3.32
	29	7.55	1.41	9.00	1.76	10.4	2.15	11.20	2.35	11.95	2.58	13.40	3.04	14.8	3.55
	31	7.55	1.50	9.00	1.87	10.4	2.28	11.20	2.51	11.95	2.75	13.40	3.25	14.6	3.69
	33	7.55	1.59	9.00	1.99	10.4	2.43	11.20	2.67	11.95	2.92	13.40	3.46	14.4	3.83
	35	7.55	1.69	9.00	2.11	10.4	2.59	11.20	2.84	11.95	3.11	13.40	3.69	14.1	3.97
	37	7.55	1.79	9.00	2.24	10.4	2.75	11.20	3.03	11.95	3.32	13.40	3.93	13.9	4.10
	39	7.55	1.90	9.00	2.39	10.4	2.93	11.20	3.22	11.95	3.53	13.40	4.19	13.7	4.25
	42	7.55	1.95	9.00	2.42	10.4	2.98	11.20	3.33	11.95	3.61	13.40	4.33	13.5	4.35
	44	7.55	2.04	9.00	2.45	10.4	3.04	11.20	3.39	11.95	3.67	13.40	4.36	13.4	4.39
	46	7.55	2.07	9.00	2.48	10.4	3.10	11.20	3.48	11.95	3.74	13.40	4.43	13.3	4.49
70%	10	6.60	0.95	7.90	1.13	9.15	1.31	9.80	1.42	10.45	1.52	11.70	1.72	13.0	1.94
	12	6.60	0.96	7.90	1.14	9.15	1.34	9.80	1.44	10.45	1.54	11.70	1.76	13.0	1.98
	14	6.60	0.98	7.90	1.17	9.15	1.36	9.80	1.46	10.45	1.57	11.70	1.79	13.0	2.01
	16	6.60	1.00	7.90	1.19	9.15	1.39	9.80	1.50	10.45	1.60	11.70	1.82	13.0	2.05
	18	6.60	1.01	7.90	1.21	9.15	1.42	9.80	1.52	10.45	1.63	11.70	1.86	13.0	2.09
	20	6.60	1.03	7.90	1.23	9.15	1.44	9.80	1.55	10.45	1.66	11.70	1.90	13.0	2.15
	21	6.60	1.04	7.90	1.24	9.15	1.45	9.80	1.57	10.45	1.68	11.70	1.92	13.0	2.23
	23	6.60	1.05	7.90	1.26	9.15	1.49	9.80	1.62	10.45	1.76	11.70	2.06	13.0	2.38
	25	6.60	1.08	7.90	1.31	9.15	1.58	9.80	1.73	10.45	1.88	11.70	2.20	13.0	2.55
	27	6.60	1.14	7.90	1.40	9.15	1.69	9.80	1.84	10.45	2.01	11.70	2.35	13.0	2.73

	29	6.60	1.21	7.90	1.49	9.15	1.79	9.80	1.96	10.45	2.13	11.70	2.51	13.0	2.91
	31	6.60	1.28	7.90	1.58	9.15	1.91	9.80	2.09	10.45	2.27	11.70	2.67	13.0	3.10
	33	6.60	1.36	7.90	1.68	9.15	2.03	9.80	2.22	10.45	2.42	11.70	2.85	13.0	3.31
	35	6.60	1.44	7.90	1.78	9.15	2.16	9.80	2.36	10.45	2.58	11.70	3.03	13.0	3.53
	37	6.60	1.52	7.90	1.88	9.15	2.29	9.80	2.51	10.45	2.74	11.70	3.23	13.0	3.76
	39	6.60	1.61	7.90	2.00	9.15	2.43	9.80	2.67	10.45	2.91	11.70	3.43	13.0	4.00
	42	6.60	1.70	7.90	2.09	9.15	2.53	9.80	2.79	10.45	3.03	11.70	3.62	13.0	4.24
	44	6.60	1.82	7.90	2.21	9.15	2.61	9.80	2.90	10.45	3.15	11.70	3.79	13.0	4.38
	46	6.60	1.90	7.90	2.30	9.15	2.72	9.80	3.00	10.45	3.24	11.70	3.91	13.0	4.48
60%	10	5.65	0.83	6.75	0.97	7.85	1.12	8.40	1.20	8.95	1.28	10.05	1.45	11.1	1.63
	12	5.65	0.84	6.75	0.98	7.85	1.14	8.40	1.22	8.95	1.30	10.05	1.48	11.1	1.66
	14	5.65	0.85	6.75	1.00	7.85	1.16	8.40	1.25	8.95	1.33	10.05	1.51	11.1	1.69
	16	5.65	0.86	6.75	1.02	7.85	1.18	8.40	1.27	8.95	1.35	10.05	1.53	11.1	1.72
	18	5.65	0.88	6.75	1.03	7.85	1.20	8.40	1.29	8.95	1.38	10.05	1.56	11.1	1.75
	20	5.65	0.89	6.75	1.05	7.85	1.22	8.40	1.31	8.95	1.41	10.05	1.59	11.1	1.79
	21	5.65	0.90	6.75	1.06	7.85	1.23	8.40	1.33	8.95	1.42	10.05	1.61	11.1	1.80
	23	5.65	0.91	6.75	1.08	7.85	1.26	8.40	1.35	8.95	1.44	10.05	1.67	11.1	1.92
	25	5.65	0.93	6.75	1.10	7.85	1.30	8.40	1.42	8.95	1.53	10.05	1.78	11.1	2.05
	27	5.65	0.96	6.75	1.17	7.85	1.39	8.40	1.51	8.95	1.63	10.05	1.90	11.1	2.19
	29	5.65	1.02	6.75	1.23	7.85	1.48	8.40	1.61	8.95	1.74	10.05	2.03	11.1	2.34
	31	5.65	1.08	6.75	1.31	7.85	1.57	8.40	1.71	8.95	1.85	10.05	2.16	11.1	2.49
	33	5.65	1.14	6.75	1.39	7.85	1.67	8.40	1.82	8.95	1.97	10.05	2.29	11.1	2.65
	35	5.65	1.21	6.75	1.47	7.85	1.77	8.40	1.93	8.95	2.09	10.05	2.44	11.1	2.82
	37	5.65	1.28	6.75	1.56	7.85	1.87	8.40	2.04	8.95	2.22	10.05	2.60	11.1	3.00
	39	5.65	1.35	6.75	1.65	7.85	1.99	8.40	2.17	8.95	2.36	10.05	2.76	11.1	3.19
	42	5.65	1.40	6.75	1.74	7.85	2.08	8.40	2.28	8.95	2.47	10.05	2.93	11.1	3.39
	44	5.65	1.46	6.75	1.84	7.85	2.18	8.40	2.36	8.95	2.59	10.05	3.09	11.1	3.58
	46	5.65	1.54	6.75	1.93	7.85	2.26	8.40	2.46	8.95	2.72	10.05	3.20	11.1	3.77
50%	10	4.73	0.71	5.65	0.83	6.55	0.94	7.00	1.01	7.45	1.06	8.35	1.20	9.30	1.34
	12	4.73	0.72	5.65	0.84	6.55	0.96	7.00	1.02	7.45	1.09	8.35	1.22	9.30	1.36
	14	4.73	0.73	5.65	0.85	6.55	0.97	7.00	1.04	7.45	1.10	8.35	1.24	9.30	1.38
	16	4.73	0.74	5.65	0.86	6.55	0.98	7.00	1.05	7.45	1.12	8.35	1.26	9.30	1.41
	18	4.73	0.75	5.65	0.87	6.55	1.00	7.00	1.07	7.45	1.14	8.35	1.28	9.30	1.43
	20	4.73	0.76	5.65	0.88	6.55	1.02	7.00	1.09	7.45	1.16	8.35	1.30	9.30	1.46
	21	4.73	0.77	5.65	0.89	6.55	1.03	7.00	1.10	7.45	1.17	8.35	1.32	9.30	1.47
	23	4.73	0.78	5.65	0.90	6.55	1.04	7.00	1.12	7.45	1.19	8.35	1.34	9.30	1.51
	25	4.73	0.79	5.65	0.92	6.55	1.06	7.00	1.14	7.45	1.23	8.35	1.41	9.30	1.61
	27	4.73	0.80	5.65	0.96	6.55	1.12	7.00	1.21	7.45	1.30	8.35	1.50	9.30	1.71
	29	4.73	0.85	5.65	1.01	6.55	1.19	7.00	1.29	7.45	1.39	8.35	1.60	9.30	1.83
	31	4.73	0.89	5.65	1.07	6.55	1.26	7.00	1.37	7.45	1.47	8.35	1.70	9.30	1.94
	33	4.73	0.95	5.65	1.13	6.55	1.34	7.00	1.45	7.45	1.56	8.35	1.80	9.30	2.07
	35	4.73	1.00	5.65	1.20	6.55	1.42	7.00	1.53	7.45	1.66	8.35	1.92	9.30	2.19
	37	4.73	1.05	5.65	1.27	6.55	1.50	7.00	1.62	7.45	1.76	8.35	2.03	9.30	2.33
	39	4.73	1.11	5.65	1.34	6.55	1.59	7.00	1.72	7.45	1.86	8.35	2.16	9.30	2.48
	42	4.73	1.17	5.65	1.41	6.55	1.66	7.00	1.83	7.45	1.97	8.35	2.31	9.30	2.63
	44	4.73	1.24	5.65	1.49	6.55	1.74	7.00	1.93	7.45	2.02	8.35	2.46	9.30	2.78
	46	4.73	1.29	5.65	1.57	6.55	1.82	7.00	2.03	7.45	2.08	8.35	2.62	9.30	2.94

## Note:

- is shown as reference
- In cooling mode, avoid the outdoor air temperature range from 42-46 degree C, when selecting the models
- The above table shows the average value of conditions may operate
- It is recommended to connect less than 130%

**Heating**

Combination (%) (Capacity index)	Outdoor Air temperature (°C DB)		Indoor temperature(°C WB)											
			16		18		20		21		22		24	
	°C DB	°C WB	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
130%	-19.8	-20	9.97	2.94	9.92	3.14	9.88	3.36	9.88	3.46	9.83	3.56	9.83	3.77
	-18.8	-19	10.12	3.00	10.07	3.21	10.07	3.41	10.02	3.52	10.02	3.61	9.97	3.82
	-16.7	-17	10.51	3.14	10.46	3.34	10.41	3.54	10.41	3.64	10.41	3.73	10.36	3.93
	-13.7	-15	10.95	3.29	10.90	3.48	10.85	3.67	10.85	3.76	10.80	3.86	10.80	4.05
	-11.8	-13	11.39	3.44	11.39	3.62	11.34	3.80	11.29	3.89	11.29	3.98	11.24	4.16
	-9.8	-11	11.93	3.59	11.88	3.76	11.83	3.93	11.83	4.02	11.83	4.11	11.78	4.28
	-9.5	-10	12.22	3.66	12.17	3.83	12.12	4.00	12.12	4.08	12.08	4.17	12.08	4.33
	-8.5	-9.1	12.47	3.73	12.42	3.89	12.42	4.06	12.37	4.14	12.37	4.22	12.32	4.39
	-7	-7.6	12.91	3.84	12.91	4.00	12.86	4.15	12.86	4.24	12.81	4.31	12.76	4.47
	-5	-5.6	13.59	3.98	13.54	4.13	13.49	4.28	13.49	4.36	13.44	4.43	13.44	4.58
	-3	-3.7	14.23	4.11	14.18	4.26	14.18	4.40	14.13	4.47	14.13	4.54	14.08	4.68
	0	-0.7	15.35	4.31	15.35	4.45	15.30	4.58	15.30	4.62	15.25	4.71	15.25	4.84
	3	2.2	16.57	4.49	16.52	4.61	16.48	4.74	16.48	4.80	16.48	4.86	16.43	4.98
	5	4.1	17.40	4.60	17.35	4.72	17.35	4.84	17.31	4.89	17.31	4.95	17.26	5.07
	7	6	18.28	4.71	18.24	4.82	18.24	4.93	18.19	4.99	18.19	5.04	17.45	4.84
	9	7.9	19.21	4.81	19.16	4.92	19.16	5.02	19.12	5.07	18.72	4.97	17.45	4.55
	11	9.8	20.19	4.91	20.14	5.00	20.04	5.07	19.36	4.87	18.72	4.67	17.45	4.28
	13	11.8	21.27	5.00	21.22	5.09	20.04	4.75	19.36	4.56	18.72	4.38	17.45	4.02
	15	13.7	22.29	5.08	21.32	4.82	20.04	4.47	19.36	4.30	18.72	4.13	17.45	3.79
120%	-19.8	-20	9.92	3.22	9.88	3.41	9.83	3.60	9.83	3.70	9.83	3.79	9.78	3.99
	-18.8	-19	10.07	3.28	10.02	3.47	10.02	3.66	9.97	3.75	9.97	3.85	9.92	4.04
	-16.7	-17	10.46	3.41	10.41	3.59	10.35	3.77	10.36	3.86	10.36	3.95	10.32	4.13
	-13.7	-15	10.90	3.54	10.85	3.72	10.81	3.89	10.81	3.98	10.81	4.07	10.76	4.24
	-11.8	-13	11.34	3.68	11.34	3.85	11.29	4.01	11.29	4.10	11.25	4.18	11.25	4.35
	-9.8	-11	11.88	3.82	11.83	3.98	11.83	4.14	11.78	4.22	11.78	4.30	11.73	4.46
	-9.5	-10	12.17	3.89	12.13	4.05	12.08	4.20	12.08	4.28	12.08	4.35	12.03	4.51
	-8.5	-9.1	12.42	3.95	12.37	4.10	12.37	4.25	12.32	4.33	12.32	4.41	12.27	4.56
	-7	-7.6	12.86	4.05	12.86	4.20	12.81	4.34	12.81	4.42	12.76	4.49	12.76	4.64
	-5	-5.6	13.54	4.18	13.49	4.32	13.44	4.46	13.44	4.53	13.44	4.60	13.40	4.74
	-3	-3.7	14.18	4.31	14.18	4.44	14.13	4.57	14.13	4.64	14.08	4.71	14.08	4.84
	0	-0.7	15.30	4.49	15.30	4.61	15.25	4.73	15.25	4.80	15.20	4.86	15.20	4.98
	3	2.2	16.53	4.66	16.48	4.77	16.48	4.88	16.43	4.94	16.43	5.00	16.08	4.97
	5	4.1	17.36	4.76	17.31	4.87	17.31	4.98	17.26	5.03	17.26	5.08	16.08	4.67
	7	6	18.24	4.86	18.24	4.96	18.19	5.06	17.89	4.99	17.31	4.79	16.08	4.39
	9	7.9	19.17	4.95	19.12	5.05	18.48	4.88	17.89	4.69	17.31	4.50	16.08	4.13
	11	9.8	20.14	5.04	19.65	4.95	18.48	4.59	17.89	4.41	17.31	4.24	16.08	3.90
	13	11.8	20.88	4.99	19.65	4.65	18.48	4.31	17.89	4.14	17.31	3.98	16.08	3.66
	15	13.7	20.88	4.70	19.65	4.38	18.48	4.06	17.89	3.91	17.31	3.75	16.08	3.46
110%	-19.8	-20	9.88	3.50	9.83	3.67	9.78	3.85	9.78	3.94	9.78	4.03	9.73	4.20
	-18.8	-19	10.02	3.56	9.97	3.73	9.97	3.90	9.97	3.99	9.92	4.07	9.92	4.25
	-16.7	-17	10.41	3.67	10.37	3.84	10.51	4.01	10.32	4.09	10.32	4.18	10.27	4.34
	-13.7	-15	10.85	3.80	10.81	3.96	10.76	4.12	10.76	4.20	10.76	4.28	10.71	4.44
	-11.8	-13	11.29	3.93	11.29	4.08	11.24	4.23	11.24	4.31	11.19	4.38	11.19	4.54
	-9.8	-11	11.83	4.05	11.78	4.20	11.78	4.34	11.73	4.42	11.73	4.49	11.73	4.64
	-9.5	-10	12.12	4.12	12.08	4.26	12.03	4.40	12.03	4.47	12.03	4.54	11.98	4.68
	-8.5	-9.1	12.37	4.17	12.32	4.31	12.32	4.45	12.27	4.52	12.27	4.59	12.27	4.19
	-7	-7.6	12.81	4.27	12.81	4.40	12.76	4.53	12.76	4.60	12.76	4.67	12.71	4.80
	-5	-5.6	13.49	4.39	13.44	4.52	13.40	4.64	13.40	4.71	13.40	4.77	13.35	4.90
	-3	-3.7	14.13	4.50	14.13	4.62	14.08	4.74	14.08	4.80	14.03	4.86	14.03	4.99
	0	-0.7	15.25	4.67	15.25	4.78	15.21	4.89	15.21	4.95	15.21	5.01	14.76	4.91
	3	2.2	16.48	4.82	16.43	4.93	16.43	5.03	16.38	5.08	15.84	4.87	14.76	4.47
	5	4.1	17.31	4.92	17.31	5.02	16.96	4.97	16.38	4.77	15.84	4.58	14.76	4.20
	7	6	18.19	5.01	18.04	5.04	16.96	4.67	16.38	4.48	15.84	4.31	14.76	3.95
	9	7.9	19.12	5.09	18.04	4.74	16.96	4.39	16.38	4.22	15.84	4.05	14.76	3.73
	11	9.8	19.12	4.79	18.04	4.46	16.96	4.13	16.38	3.98	15.84	3.82	14.76	3.52
	13	11.8	19.12	4.49	18.04	4.18	16.96	3.88	16.38	3.74	15.84	3.59	14.76	3.31
	15	13.7	19.12	3.99	18.04	3.94	16.96	3.67	16.38	3.53	15.84	3.40	14.76	3.13
100%	-19.8	-20	9.83	3.78	9.78	3.94	9.78	4.10	9.73	4.18	9.73	4.26	9.68	4.42
	-18.8	-19	9.97	3.83	9.97	3.99	9.92	4.14	9.92	4.22	9.88	4.31	9.88	4.46
	-16.7	-17	10.36	3.94	10.31	4.09	10.31	4.24	10.27	4.32	10.27	4.39	10.27	4.54

	-13.7	-15	10.80	4.05	10.76	4.20	10.71	4.34	10.71	4.42	10.71	4.49	10.66	4.64
	-11.8	-13	11.25	4.17	11.25	4.31	11.20	4.45	11.20	4.52	11.20	4.59	11.15	4.73
	-9.8	-11	11.78	4.28	11.73	4.42	11.73	4.55	11.73	4.62	11.68	4.68	11.68	4.81
	-9.5	-10	12.08	4.34	12.03	4.47	12.03	4.60	11.98	4.67	11.98	4.73	11.93	4.86
	-8.5	-9.1	12.32	4.39	12.27	4.52	12.27	4.65	12.27	4.71	12.22	4.78	12.22	4.90
	-7	-7.6	12.76	4.48	12.76	4.60	12.71	4.72	12.71	4.79	12.71	4.85	12.66	4.97
	-5	-5.6	13.44	4.59	13.39	4.71	13.39	4.82	13.35	4.88	13.35	4.94	13.30	5.06
	-3	-3.7	14.08	4.69	14.08	4.26	14.03	4.92	14.03	4.97	14.03	5.02	13.44	4.81
	0	-0.7	15.20	4.85	15.20	4.95	15.16	5.05	14.91	4.97	14.42	4.77	13.44	4.37
	3	2.2	16.43	4.99	16.38	5.08	15.40	4.70	14.91	4.52	14.42	4.34	13.44	3.98
	5	4.1	17.26	5.08	16.38	4.77	15.40	4.42	14.91	4.25	14.42	4.08	13.44	3.75
	7	6	17.36	4.82	16.38	4.48	15.40	4.16	14.91	4.00	14.42	3.85	13.44	3.54
	9	7.9	17.36	4.53	16.38	4.22	15.40	3.92	14.91	3.72	14.42	3.63	13.44	3.34
	11	9.8	17.36	4.26	16.38	3.98	15.40	3.70	14.91	3.55	14.42	3.42	13.44	3.15
	13	11.8	17.36	4.00	16.38	3.74	15.40	3.48	14.91	3.35	14.42	3.23	13.44	2.98
	15	13.7	17.36	3.78	16.38	3.53	15.40	3.28	14.91	3.17	14.42	3.05	13.44	2.82
90%	-19.8	-20	9.76	4.06	9.71	4.20	9.71	4.35	9.66	4.42	9.66	4.49	9.66	4.64
	-18.8	-19	9.91	4.11	9.91	4.25	9.86	4.39	9.86	4.46	9.86	4.53	9.81	4.67
	-16.7	-17	10.30	4.21	10.25	4.34	10.25	4.48	10.25	4.55	10.20	4.61	10.20	4.75
	-13.7	-15	10.74	4.31	10.69	4.44	10.69	4.57	10.64	4.64	10.64	4.70	10.64	4.83
	-11.8	-13	11.18	4.41	11.18	4.54	11.13	4.66	11.13	4.73	11.13	4.79	11.08	4.91
	-9.8	-11	11.71	4.52	11.71	4.64	11.66	4.75	11.66	4.81	11.66	4.88	11.61	5.00
	-9.5	-10	12.01	4.57	11.96	4.69	11.96	4.80	11.91	4.86	11.91	4.92	11.91	5.04
	-8.5	-9.1	12.25	4.62	12.25	4.73	12.20	4.85	12.20	4.90	12.20	4.96	12.05	5.01
	-7	-7.6	12.69	4.69	12.69	4.80	12.64	4.92	12.64	4.97	12.64	5.02	12.05	4.78
	-5	-5.6	13.37	4.80	13.32	4.90	13.32	5.00	13.27	5.06	12.93	4.90	12.05	4.49
	-3	-3.7	14.01	4.89	14.01	4.99	13.86	5.01	13.37	4.81	12.93	4.61	12.05	4.24
	0	-0.7	15.18	5.03	14.74	4.91	13.86	4.54	13.37	4.37	12.93	4.19	12.05	3.85
	3	2.2	15.62	4.79	14.74	4.46	13.86	4.14	13.37	3.98	12.93	3.83	12.05	3.52
	5	4.1	15.62	4.51	14.74	4.20	13.86	3.90	13.37	3.75	12.93	3.61	12.05	3.32
	7	6	15.62	4.24	14.74	3.95	13.86	3.67	13.37	3.54	12.93	3.40	12.05	3.14
	9	7.9	15.62	3.99	14.74	3.72	13.86	3.46	13.37	3.34	12.93	3.21	12.05	2.97
	11	9.8	15.62	3.76	14.74	3.51	13.86	3.27	13.37	3.15	12.93	3.04	12.05	2.81
	13	11.8	15.62	3.54	14.74	3.31	13.86	3.08	13.37	2.98	12.93	2.87	12.05	2.65
	15	13.7	15.62	3.34	14.74	3.13	13.86	2.92	13.37	2.82	12.93	2.72	12.05	2.52
80%	-19.8	-20	9.73	4.34	9.68	4.47	9.68	4.60	9.68	4.66	9.63	4.73	9.63	4.85
	-18.8	-19	9.88	4.38	9.88	4.51	9.83	4.64	9.83	4.70	9.83	4.76	9.78	4.89
	-16.7	-17	10.27	4.47	10.22	4.59	10.22	4.72	10.22	4.78	10.22	4.84	10.17	4.95
	-13.7	-15	10.71	4.57	10.66	4.68	10.66	4.80	10.66	4.85	10.61	4.91	10.61	5.03
	-11.8	-13	11.15	4.66	11.15	4.77	11.10	4.88	11.10	4.93	11.10	4.99	10.76	4.86
	-9.8	-11	11.68	4.75	11.68	4.86	11.64	4.96	11.64	5.01	11.54	5.00	10.76	4.59
	-9.5	-10	11.98	4.80	11.93	4.90	11.93	5.00	11.93	5.06	11.54	4.86	10.76	4.45
	-8.5	-9.1	12.22	4.84	11.36	4.94	12.17	5.04	11.93	4.93	11.54	4.73	10.76	4.33
	-7	-7.6	12.66	4.91	12.66	5.01	12.32	4.90	11.93	4.71	11.54	4.52	10.76	4.14
	-5	-5.6	13.35	5.00	13.10	4.97	12.32	4.60	11.93	4.42	11.54	4.25	10.76	3.90
	-3	-3.7	13.88	5.02	13.10	4.68	12.32	4.33	11.93	4.17	11.54	4.00	10.76	3.68
	0	-0.7	13.88	4.56	13.10	4.25	12.32	3.94	11.93	3.80	11.54	3.65	10.76	3.36
	3	2.2	13.88	4.15	13.10	3.87	12.32	3.60	11.93	3.47	11.54	3.34	10.76	3.08
	5	4.1	13.88	3.91	13.10	3.65	12.32	3.40	11.93	3.27	11.54	3.16	10.76	2.91
	7	6	13.88	3.68	13.10	3.45	12.32	3.21	11.93	3.10	11.54	2.98	10.76	2.76
	9	7.9	13.88	3.48	13.10	3.25	12.32	3.03	11.93	2.92	11.54	2.82	10.76	2.61
	11	9.8	13.88	3.28	13.10	3.07	12.32	2.87	11.93	2.77	11.54	2.67	10.76	2.47
	13	11.8	13.88	3.10	13.10	2.90	12.32	2.71	11.93	2.61	11.54	2.52	10.76	2.34
	15	13.7	13.88	2.93	13.10	2.75	12.32	2.57	11.93	2.48	11.54	2.39	10.76	2.23
70%	-19.8	-20	9.66	4.62	9.61	4.73	9.61	4.85	9.61	4.90	9.61	4.96	9.37	4.91
	-18.8	-19	9.80	4.66	9.80	4.77	9.76	4.88	9.76	4.93	9.76	4.99	9.37	4.80
	-16.7	-17	10.19	4.74	10.19	4.85	10.15	4.95	10.15	5.00	10.05	4.46	9.37	4.58
	-13.7	-15	10.63	4.82	10.58	4.92	10.58	5.02	10.39	4.95	10.05	4.75	9.37	4.35
	-11.8	-13	11.07	4.90	11.07	5.00	10.78	4.88	10.39	4.69	10.05	4.50	9.37	4.13
	-9.8	-11	11.61	4.98	11.46	4.98	10.78	4.61	10.39	4.43	10.05	4.25	9.37	3.91
	-9.5	-10	11.90	5.02	11.46	4.83	10.78	4.47	10.39	4.30	10.05	4.13	9.37	3.80
	-8.5	-9.1	12.15	5.05	11.46	4.70	10.78	4.35	10.39	4.19	10.05	4.02	9.37	3.70
	-7	-7.6	12.15	4.82	11.46	4.49	10.78	4.17	10.39	4.01	10.05	3.85	9.37	3.54
	-5	-5.6	12.15	4.53	11.46	4.22	10.78	3.92	10.39	3.77	10.05	4.45	9.37	3.34
	-3	-3.7	12.15	4.27	11.46	3.98	10.78	3.70	10.39	3.56	10.05	3.43	9.37	3.16

	0	-0.7	12.15	3.88	11.46	3.63	10.78	3.38	10.39	3.25	10.05	3.13	9.37	2.90
	3	2.2	12.15	3.55	11.46	3.32	10.78	3.10	10.39	2.98	10.05	2.87	9.37	2.66
	5	4.1	12.15	3.35	11.46	3.13	10.78	2.93	10.39	2.82	10.05	2.72	9.37	2.52
	7	6	12.15	3.17	11.46	2.97	10.78	2.77	10.39	2.67	10.05	2.58	9.37	2.39
	9	7.9	12.15	2.99	11.46	2.80	10.78	2.62	10.39	2.53	10.05	2.44	9.37	2.26
	11	9.8	12.15	2.83	11.46	2.65	10.78	2.48	10.39	2.40	10.05	2.32	9.37	2.15
	13	11.8	12.15	2.67	11.46	2.51	10.78	2.35	10.39	2.27	10.05	2.19	9.37	2.04
	15	13.7	12.15	2.53	11.46	2.38	10.78	2.23	10.39	2.16	10.05	2.09	9.37	1.94
60%	-19.8	-20	9.63	4.91	9.58	5.00	9.24	4.81	8.95	4.62	8.65	4.44	8.07	4.07
	-18.8	-19	9.78	4.94	9.78	5.03	9.24	4.71	8.95	4.52	8.65	4.34	8.07	3.98
	-16.7	-17	10.17	5.00	9.83	4.85	9.24	4.49	8.95	4.32	8.65	4.14	8.07	3.81
	-13.7	-15	10.41	4.95	9.83	4.60	9.24	4.27	8.95	4.11	8.65	3.94	8.07	3.62
	-11.8	-13	10.41	4.68	9.83	4.36	9.24	4.05	8.95	3.90	8.65	3.74	8.07	3.46
	-9.8	-11	10.41	4.42	9.83	4.12	9.24	3.83	8.95	3.68	8.65	3.54	8.07	3.27
	-9.5	-10	10.41	4.30	9.83	4.01	9.24	3.72	8.95	3.59	8.65	3.45	8.07	3.18
	-8.5	-9.1	10.41	4.19	9.83	3.91	9.24	3.63	8.95	3.50	8.65	3.36	8.07	3.10
	-7	-7.6	10.41	4.00	9.83	3.74	9.24	3.47	8.95	3.35	8.65	3.22	8.07	2.98
	-5	-5.6	10.41	3.77	9.83	3.52	9.24	3.28	8.95	3.16	8.65	3.04	8.07	2.81
	-3	-3.7	10.41	3.56	9.83	3.33	9.24	3.10	8.95	2.99	8.65	2.88	8.07	2.66
	0	-0.7	10.41	3.25	9.83	3.05	9.24	2.84	8.95	2.74	8.65	2.64	8.07	2.45
	3	2.2	10.41	2.98	9.83	2.80	9.24	2.61	8.95	2.52	8.65	2.44	8.07	2.26
	5	4.1	10.41	2.82	9.83	2.65	9.24	2.47	8.95	2.39	8.65	2.31	8.07	2.14
	7	6	10.41	2.67	9.83	2.51	9.24	2.34	8.95	2.27	8.65	2.19	8.07	2.04
	9	7.9	10.41	2.53	9.83	2.38	9.24	2.23	8.95	2.16	8.65	2.08	8.07	1.94
	11	9.8	10.41	2.40	9.83	2.26	9.24	2.12	8.95	2.05	8.65	1.98	8.07	1.85
	13	11.8	10.41	2.27	9.83	2.14	9.24	2.01	8.95	1.95	8.65	1.88	8.07	1.76
	15	13.7	10.41	2.16	9.83	2.03	9.24	1.91	8.95	1.85	8.65	1.79	8.07	1.67
50%	-19.8	-20	8.67	4.46	8.19	4.15	7.70	3.86	7.41	3.72	7.16	3.57	6.68	3.29
	-18.8	-19	8.67	4.36	8.19	4.07	7.70	3.78	7.41	3.64	7.16	3.50	6.68	3.23
	-16.7	-17	8.67	4.17	8.19	3.88	7.70	3.61	7.41	3.48	7.16	3.35	6.68	3.09
	-13.7	-15	8.67	3.97	8.19	3.70	7.70	3.44	7.41	3.32	7.16	3.19	6.68	2.95
	-11.8	-13	8.67	3.77	8.19	3.52	7.70	3.27	7.41	3.15	7.16	3.04	6.68	2.81
	-9.8	-11	8.67	3.57	8.19	3.33	7.70	3.11	7.41	2.99	7.16	2.88	6.68	2.67
	-9.5	-10	8.67	3.47	8.19	3.24	7.70	3.03	7.41	2.92	7.16	2.81	6.68	2.60
	-8.5	-9.1	8.67	3.38	8.19	3.17	7.70	2.95	7.41	2.85	7.16	2.74	6.68	2.54
	-7	-7.6	8.67	3.24	8.19	3.04	7.70	2.83	7.41	2.73	7.16	2.64	6.68	2.44
	-5	-5.6	8.67	3.06	8.19	2.87	7.70	2.68	7.41	2.59	7.16	2.50	6.68	2.31
	-3	-3.7	8.67	2.90	8.19	2.72	7.70	2.54	7.41	2.45	7.16	2.37	6.68	2.20
	0	-0.7	8.67	2.66	8.19	2.50	7.70	2.34	7.41	2.26	7.16	2.18	6.68	2.03
	3	2.2	8.67	2.45	8.19	2.30	7.70	2.16	7.41	2.09	7.16	2.01	6.68	1.88
	5	4.1	8.67	2.32	8.19	2.18	7.70	2.05	7.41	1.98	7.16	1.92	6.68	1.79
	7	6	8.67	2.20	8.19	2.07	7.70	1.95	7.41	1.89	7.16	1.83	6.68	1.71
	9	7.9	8.67	2.09	8.19	1.97	7.70	1.85	7.41	1.80	7.16	1.74	6.68	1.63
	11	9.8	8.67	1.99	8.19	1.87	7.70	1.77	7.41	1.71	7.16	1.66	6.68	1.55
	13	11.8	8.67	1.89	8.19	1.78	7.70	1.68	7.41	1.63	7.16	1.58	6.68	1.48
	15	13.7	8.67	1.80	8.19	1.70	7.70	1.60	7.41	1.56	7.16	1.51	6.68	1.42

## Note:

- is shown as reference
- In heating mode, avoid the outdoor air temperature range from -15 to -20 degree C, when selecting the models
- The above table shows the average value of conditions may operate
- It is recommended to connect less than 130%

**MVUH160A-VA1****Cooling**

Combinati on (%) (Capacity index)	Outdoor Air temperatu re(°C DB)	Indoor temperature(°C WB)													
		14.00		16.00		18.00		19.00		20.00		22.00		24.00	
		TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
130%	10	13.6	2.08	16.2	2.55	18.8	3.03	19.54	3.09	19.76	3.03	20.26	2.91	20.7	2.77
	12	13.6	2.12	16.2	2.60	18.8	3.09	19.26	3.08	19.54	3.02	19.98	2.88	20.4	2.84
	14	13.6	2.16	16.2	2.64	18.7	3.13	19.04	3.09	19.26	3.00	19.76	2.97	20.2	3.00
	16	13.6	2.20	16.2	2.70	18.5	3.11	18.77	3.06	18.99	3.10	19.49	3.13	19.9	3.16
	18	13.6	2.24	16.2	2.75	18.2	3.23	18.49	3.25	18.77	3.27	19.26	3.30	19.7	3.33
	20	13.6	2.29	16.2	2.93	17.9	3.39	18.27	3.41	18.49	3.42	18.99	3.45	19.4	3.49
	21	13.6	2.35	16.2	3.03	17.8	3.47	18.16	3.48	18.38	3.50	18.88	3.54	19.3	3.57
	23	13.6	2.52	16.2	3.25	17.6	3.62	17.88	3.64	18.10	3.66	18.60	3.70	19.1	3.73
	25	13.6	2.69	16.2	3.48	17.3	3.78	17.60	3.80	17.88	3.83	18.38	3.86	18.8	3.90
	27	13.6	2.88	16.2	3.73	17.1	3.94	17.38	3.97	17.60	3.98	18.10	4.03	18.6	4.07
	29	13.6	3.07	16.2	3.98	16.8	4.10	17.10	4.12	17.38	4.15	17.88	4.19	18.3	4.23
	31	13.6	3.28	16.1	4.22	16.6	4.26	16.88	4.29	17.10	4.31	17.60	4.36	18.1	4.40
	33	13.6	3.49	15.8	4.37	16.3	4.42	16.61	4.45	16.88	4.47	17.38	4.52	17.8	4.57
	35	13.6	3.72	15.6	4.53	16.1	4.59	16.39	4.61	16.61	4.64	17.10	4.69	17.6	4.74
	37	13.6	3.96	15.3	4.70	15.8	4.75	16.11	4.78	16.39	4.81	16.83	4.86	17.3	4.92
	39	13.6	4.22	15.1	4.75	15.6	4.91	15.89	4.94	16.11	4.97	16.61	5.03	17.1	5.09
	42	13.6	4.44	14.9	4.79	15.4	4.96	15.72	4.99	15.94	5.02	16.44	5.04	16.4	5.13
	44	13.6	4.66	14.8	4.84	15.2	4.98	15.56	5.03	15.62	5.03	15.84	5.05	16.0	5.16
	46	13.6	4.89	14.7	4.88	15.1	5.05	15.40	5.05	15.49	5.06	15.57	5.07	15.8	5.33
120%	10	12.5	1.90	14.9	2.32	17.3	2.76	18.60	2.98	19.49	3.11	19.93	2.99	20.3	2.88
	12	12.5	1.94	14.9	2.36	17.3	2.81	18.60	3.04	19.21	3.09	19.65	2.98	20.0	2.86
	14	12.5	1.97	14.9	2.41	17.3	2.87	18.60	3.10	18.93	3.08	19.43	2.96	19.8	2.98
	16	12.5	2.01	14.9	2.46	17.3	2.92	18.49	3.13	18.71	3.08	19.15	3.11	19.6	3.14
	18	12.5	2.05	14.9	2.51	17.3	3.02	18.21	3.23	18.43	3.24	18.88	3.27	19.3	3.30
	20	12.5	2.09	14.9	2.61	17.3	3.25	17.99	3.39	18.21	3.40	18.66	3.43	19.1	3.46
	21	12.5	2.11	14.9	2.70	17.3	3.37	17.82	3.47	18.05	3.48	18.54	3.51	18.9	3.55
	23	12.5	2.25	14.9	2.89	17.3	3.61	17.60	3.62	17.82	3.64	18.27	3.67	18.7	3.70
	25	12.5	2.41	14.9	3.09	17.1	3.76	17.33	3.78	17.55	3.80	18.05	3.83	18.4	3.87
	27	12.5	2.57	14.9	3.31	16.8	3.92	17.10	3.94	17.33	3.96	17.77	4.00	18.2	4.03
	29	12.5	2.74	14.9	3.53	16.6	4.08	16.83	4.10	17.05	4.12	17.49	4.16	17.9	4.20
	31	12.5	2.92	14.9	3.77	16.3	4.24	16.61	4.26	16.83	4.28	17.27	4.32	17.7	4.37
	33	12.5	3.11	14.9	4.02	16.1	4.40	16.33	4.42	16.55	4.44	16.99	4.49	17.4	4.53
	35	12.5	3.31	14.9	4.29	15.8	4.56	16.05	4.58	16.33	4.61	16.77	4.65	17.2	4.70
	37	12.5	3.53	14.9	4.57	15.6	4.72	15.83	4.75	16.05	4.77	16.50	4.82	16.9	4.87
	39	12.5	3.75	14.8	4.82	15.3	4.88	15.56	4.91	15.78	4.93	16.27	4.99	16.7	5.04
	42	12.5	3.89	14.7	4.87	15.1	4.93	15.40	4.96	15.62	4.98	16.11	5.01	16.0	5.09
	44	12.5	3.94	14.6	4.92	15.0	4.96	15.23	4.97	15.46	4.99	15.63	5.03	15.8	5.27
	46	12.5	3.98	14.5	4.96	14.8	5.02	15.07	5.05	15.34	5.06	15.47	5.04	15.7	5.31
110%	10	11.5	1.72	13.7	2.10	15.9	2.50	17.05	2.70	18.16	2.91	19.54	3.08	19.9	2.98
	12	11.5	1.76	13.7	2.14	15.9	2.55	17.05	2.75	18.16	2.96	19.32	3.07	19.7	2.96
	14	11.5	1.79	13.7	2.18	15.9	2.60	17.05	2.80	18.16	3.02	19.04	3.05	19.4	2.95
	16	11.5	1.82	13.7	2.22	15.9	2.64	17.05	2.86	18.16	3.08	18.82	3.09	19.2	3.12
	18	11.5	1.86	13.7	2.27	15.9	2.70	17.05	2.94	18.16	3.22	18.54	3.25	18.9	3.28
	20	11.5	1.89	13.7	2.31	15.9	2.86	17.05	3.16	17.88	3.38	18.32	3.41	18.7	3.44
	21	11.5	1.91	13.7	2.38	15.9	2.96	17.05	3.27	17.77	3.46	18.16	3.48	18.6	3.51
	23	11.5	2.00	13.7	2.55	15.9	3.17	17.05	3.51	17.49	3.61	17.94	3.65	18.3	3.68
	25	11.5	2.14	13.7	2.73	15.9	3.39	17.05	3.76	17.27	3.77	17.66	3.81	18.1	3.84
	27	11.5	2.28	13.7	2.92	15.9	3.63	16.77	3.92	17.00	3.93	17.44	3.97	17.8	4.00
	29	11.5	2.43	13.7	3.11	15.9	3.88	16.55	4.08	16.77	4.09	17.16	4.13	17.6	4.17
	31	11.5	2.59	13.7	3.32	15.9	4.14	16.28	4.23	16.50	4.25	16.94	4.29	17.3	4.33
	33	11.5	2.75	13.7	3.54	15.8	4.37	16.05	4.39	16.28	4.41	16.66	4.45	17.1	4.50
	35	11.5	2.93	13.7	3.77	15.5	4.53	15.78	4.55	16.00	4.58	16.39	4.62	16.8	4.66
	37	11.5	3.12	13.7	4.01	15.3	4.69	15.56	4.71	15.72	4.73	16.17	4.78	16.5	4.82
	39	11.5	3.31	13.7	4.28	15.0	4.85	15.28	4.87	15.50	4.90	15.89	4.95	16.3	5.00
	42	11.5	3.36	13.7	4.32	14.9	4.89	15.12	4.92	15.34	4.94	15.62	4.99	15.6	5.04
	44	11.5	3.40	13.7	4.37	14.7	4.94	14.96	4.96	15.19	4.99	15.47	5.01	15.5	5.22
	46	11.5	3.49	13.7	4.41	14.6	4.99	14.81	5.04	15.07	5.03	15.30	5.27	15.3	5.28
100%	10	10.4	1.56	12.4	1.89	14.5	2.24	15.50	2.42	16.50	2.60	18.54	2.97	19.6	3.08
	12	10.4	1.58	12.4	1.93	14.5	2.28	15.50	2.46	16.50	2.65	18.54	3.03	19.3	3.06

	14	10.4	1.61	12.4	1.96	14.5	2.32	15.50	2.51	16.50	2.70	18.54	3.09	19.1	3.04
	16	10.4	1.64	12.4	2.00	14.5	2.37	15.50	2.56	16.50	2.75	18.43	3.13	18.8	3.09
	18	10.4	1.68	12.4	2.03	14.5	2.41	15.50	2.61	16.50	2.81	18.21	3.23	18.6	3.25
	20	10.4	1.71	12.4	2.08	14.5	2.49	15.50	2.74	16.50	3.01	17.94	3.38	18.3	3.41
	21	10.4	1.72	12.4	2.10	14.5	2.58	15.50	2.84	16.50	3.11	17.83	3.46	18.2	3.49
	23	10.4	1.77	12.4	2.24	14.5	2.76	15.50	3.04	16.50	3.34	17.60	3.62	17.9	3.65
	25	10.4	1.88	12.4	2.39	14.5	2.95	15.50	3.26	16.50	3.58	17.33	3.78	17.7	3.81
	27	10.4	2.01	12.4	2.55	14.5	3.16	15.50	3.48	16.50	3.83	17.05	3.94	17.4	3.97
	29	10.4	2.14	12.4	2.72	14.5	3.37	15.50	3.72	16.44	4.06	16.83	4.10	17.2	4.13
	31	10.4	2.28	12.4	2.90	14.5	3.59	15.50	3.97	16.22	4.22	16.55	4.26	16.9	4.29
	33	10.4	2.42	12.4	3.09	14.5	3.83	15.50	4.24	15.94	4.38	16.33	4.42	16.7	4.46
	35	10.4	2.57	12.4	3.28	14.5	4.09	15.50	4.52	15.67	4.54	16.05	4.58	16.4	4.62
	37	10.4	2.74	12.4	3.50	14.5	4.36	15.22	4.68	15.44	4.70	15.83	4.74	16.1	4.78
	39	10.4	2.91	12.4	3.72	14.5	4.64	15.00	4.84	15.17	4.86	15.56	4.90	15.9	4.95
	42	10.4	3.09	12.4	3.90	14.5	4.86	14.69	4.88	15.01	4.96	15.20	5.02	15.6	5.09
	44	10.4	3.27	12.4	4.08	14.5	4.93	14.38	4.97	14.87	5.01	15.56	5.08	15.2	5.13
	46	10.4	3.45	12.4	4.26	14.5	5.03	14.07	5.02	14.86	5.14	14.94	5.17	15.0	5.22
90%	10	9.41	1.39	11.2	1.68	13.0	1.99	13.95	2.14	14.84	2.30	16.66	2.63	18.4	2.97
	12	9.41	1.42	11.2	1.71	13.0	2.02	13.95	2.18	14.84	2.35	16.66	2.68	18.4	3.02
	14	9.41	1.44	11.2	1.74	13.0	2.06	13.95	2.22	14.84	2.39	16.66	2.73	18.4	3.08
	16	9.41	1.47	11.2	1.77	13.0	2.10	13.95	2.27	14.84	2.44	16.66	2.78	18.4	3.13
	18	9.41	1.49	11.2	1.81	13.0	2.14	13.95	2.31	14.84	2.49	16.66	2.84	18.2	3.23
	20	9.41	1.52	11.2	1.85	13.0	2.18	13.95	2.36	14.84	2.58	16.66	3.05	17.9	3.38
	21	9.41	1.54	11.2	1.86	13.0	2.22	13.95	2.44	14.84	2.67	16.66	3.16	17.8	3.46
	23	9.41	1.57	11.2	1.94	13.0	2.38	13.95	2.61	14.84	2.86	16.66	3.39	17.5	3.62
	25	9.41	1.65	11.2	2.07	13.0	2.54	13.95	2.80	14.84	3.06	16.66	3.63	17.3	3.78
	27	9.41	1.75	11.2	2.21	13.0	2.71	13.95	2.98	14.84	3.27	16.66	3.89	17.0	3.93
	29	9.41	1.87	11.2	2.35	13.0	2.89	13.95	3.19	14.84	3.50	16.50	4.06	16.8	4.09
	31	9.41	1.99	11.2	2.50	13.0	3.08	13.95	3.40	14.84	3.73	16.22	4.22	16.5	4.26
	33	9.41	2.11	11.2	2.66	13.0	3.29	13.95	3.62	14.84	3.98	16.00	4.39	16.3	4.42
	35	9.41	2.24	11.2	2.83	13.0	3.50	13.95	3.86	14.84	4.24	15.72	4.54	16.0	4.58
	37	9.41	2.38	11.2	3.01	13.0	3.73	13.95	4.11	14.84	4.52	15.44	4.70	15.8	4.74
	39	9.41	2.52	11.2	3.20	13.0	3.97	13.95	4.38	14.84	4.81	15.22	4.87	15.5	4.90
	42	9.41	2.64	11.2	3.40	13.0	4.16	13.95	4.53	14.84	4.85	15.08	5.03	15.4	5.06
	44	9.41	2.83	11.2	3.59	13.0	4.35	13.95	4.69	14.84	5.04	15.00	5.08	15.2	5.14
	46	9.41	2.99	11.2	3.74	13.0	4.51	13.95	4.84	14.84	5.13	14.91	5.14	14.9	5.19
80%	10	8.36	1.24	9.96	1.48	11.5	1.74	12.40	1.88	13.23	2.01	14.84	2.30	16.4	2.59
	12	8.36	1.26	9.96	1.50	11.5	1.77	12.40	1.91	13.23	2.05	14.84	2.34	16.4	2.64
	14	8.36	1.28	9.96	1.54	11.5	1.80	12.40	1.94	13.23	2.09	14.84	2.38	16.4	2.69
	16	8.36	1.30	9.96	1.56	11.5	1.84	12.40	1.98	13.23	2.13	14.84	2.43	16.4	2.74
	18	8.36	1.32	9.96	1.59	11.5	1.88	12.40	2.02	13.23	2.17	14.84	2.48	16.4	2.79
	20	8.36	1.35	9.96	1.62	11.5	1.91	12.40	2.06	13.23	2.21	14.84	2.57	16.4	2.98
	21	8.36	1.36	9.96	1.63	11.5	1.93	12.40	2.08	13.23	2.26	14.84	2.66	16.4	3.09
	23	8.36	1.38	9.96	1.67	11.5	2.02	12.40	2.22	13.23	2.42	14.84	2.85	16.4	3.32
	25	8.36	1.43	9.96	1.77	11.5	2.16	12.40	2.37	13.23	2.58	14.84	3.05	16.4	3.55
	27	8.36	1.52	9.96	1.89	11.5	2.30	12.40	2.53	13.23	2.76	14.84	3.26	16.4	3.80
	29	8.36	1.61	9.96	2.01	11.5	2.46	12.40	2.69	13.23	2.95	14.84	3.48	16.4	4.06
	31	8.36	1.71	9.96	2.14	11.5	2.61	12.40	2.87	13.23	3.14	14.84	3.72	16.1	4.22
	33	8.36	1.82	9.96	2.27	11.5	2.78	12.40	3.06	13.23	3.34	14.84	3.96	15.9	4.38
	35	8.36	1.93	9.96	2.42	11.5	2.96	12.40	3.25	13.23	3.56	14.84	4.22	15.6	4.54
	37	8.36	2.05	9.96	2.56	11.5	3.15	12.40	3.47	13.23	3.80	14.84	4.50	15.4	4.70
	39	8.36	2.17	9.96	2.74	11.5	3.35	12.40	3.69	13.23	4.04	14.84	4.79	15.1	4.86
	42	8.36	2.23	9.96	2.77	11.5	3.42	12.40	3.82	13.23	4.14	14.84	4.96	15.0	4.98
	44	8.36	2.33	9.96	2.80	11.5	3.48	12.40	3.88	13.23	4.20	14.84	4.99	14.9	5.02
	46	8.36	2.36	9.96	2.83	11.5	3.55	12.40	3.98	13.23	4.28	14.84	5.07	14.8	5.14
70%	10	7.31	1.09	8.75	1.29	10.1	1.50	10.85	1.62	11.57	1.74	12.95	1.97	14.3	2.22
	12	7.31	1.10	8.75	1.31	10.1	1.54	10.85	1.65	11.57	1.77	12.95	2.01	14.3	2.26
	14	7.31	1.12	8.75	1.33	10.1	1.56	10.85	1.68	11.57	1.80	12.95	2.05	14.3	2.30
	16	7.31	1.14	8.75	1.36	10.1	1.59	10.85	1.71	11.57	1.83	12.95	2.08	14.3	2.35
	18	7.31	1.16	8.75	1.38	10.1	1.62	10.85	1.74	11.57	1.86	12.95	2.13	14.3	2.39
	20	7.31	1.18	8.75	1.41	10.1	1.65	10.85	1.77	11.57	1.90	12.95	2.17	14.3	2.46
	21	7.31	1.19	8.75	1.42	10.1	1.66	10.85	1.79	11.57	1.92	12.95	2.20	14.3	2.55
	23	7.31	1.21	8.75	1.44	10.1	1.70	10.85	1.85	11.57	2.02	12.95	2.36	14.3	2.73
	25	7.31	1.23	8.75	1.50	10.1	1.81	10.85	1.98	11.57	2.15	12.95	2.52	14.3	2.92
	27	7.31	1.30	8.75	1.60	10.1	1.93	10.85	2.11	11.57	2.30	12.95	2.69	14.3	3.12

	29	7.31	1.38	8.75	1.70	10.1	2.05	10.85	2.25	11.57	2.44	12.95	2.87	14.3	3.33
	31	7.31	1.46	8.75	1.80	10.1	2.19	10.85	2.39	11.57	2.60	12.95	3.06	14.3	3.55
	33	7.31	1.55	8.75	1.92	10.1	2.33	10.85	2.54	11.57	2.77	12.95	3.26	14.3	3.79
	35	7.31	1.64	8.75	2.03	10.1	2.47	10.85	2.70	11.57	2.95	12.95	3.47	14.3	4.04
	37	7.31	1.74	8.75	2.16	10.1	2.63	10.85	2.87	11.57	3.14	12.95	3.70	14.3	4.30
	39	7.31	1.84	8.75	2.28	10.1	2.78	10.85	3.05	11.57	3.33	12.95	3.93	14.3	4.58
	42	7.31	1.95	8.75	2.39	10.1	2.89	10.85	3.19	11.57	3.47	12.95	4.15	14.3	4.85
	44	7.31	2.08	8.75	2.53	10.1	2.98	10.85	3.32	11.57	3.60	12.95	4.33	14.3	5.01
	46	7.31	2.17	8.75	2.64	10.1	3.11	10.85	3.43	11.57	3.71	12.95	4.47	14.3	5.12
60%	10	6.26	0.94	7.47	1.11	8.69	1.29	9.30	1.38	9.91	1.47	11.13	1.66	12.3	1.86
	12	6.26	0.96	7.47	1.13	8.69	1.31	9.30	1.40	9.91	1.49	11.13	1.69	12.3	1.89
	14	6.26	0.97	7.47	1.14	8.69	1.33	9.30	1.43	9.91	1.52	11.13	1.72	12.3	1.93
	16	6.26	0.99	7.47	1.16	8.69	1.35	9.30	1.45	9.91	1.55	11.13	1.75	12.3	1.97
	18	6.26	1.00	7.47	1.18	8.69	1.38	9.30	1.47	9.91	1.58	11.13	1.78	12.3	2.00
	20	6.26	1.02	7.47	1.21	8.69	1.40	9.30	1.50	9.91	1.61	11.13	1.82	12.3	2.05
	21	6.26	1.03	7.47	1.21	8.69	1.41	9.30	1.52	9.91	1.62	11.13	1.84	12.3	2.06
	23	6.26	1.04	7.47	1.24	8.69	1.44	9.30	1.55	9.91	1.65	11.13	1.91	12.3	2.20
	25	6.26	1.06	7.47	1.25	8.69	1.49	9.30	1.62	9.91	1.75	11.13	2.04	12.3	2.34
	27	6.26	1.10	7.47	1.33	8.69	1.59	9.30	1.73	9.91	1.87	11.13	2.17	12.3	2.50
	29	6.26	1.16	7.47	1.41	8.69	1.69	9.30	1.84	9.91	1.99	11.13	2.32	12.3	2.67
	31	6.26	1.24	7.47	1.50	8.69	1.80	9.30	1.96	9.91	2.12	11.13	2.47	12.3	2.84
	33	6.26	1.30	7.47	1.59	8.69	1.91	9.30	2.08	9.91	2.25	11.13	2.63	12.3	3.03
	35	6.26	1.38	7.47	1.69	8.69	2.02	9.30	2.20	9.91	2.39	11.13	2.80	12.3	3.23
	37	6.26	1.46	7.47	1.78	8.69	2.14	9.30	2.34	9.91	2.54	11.13	2.97	12.3	3.44
	39	6.26	1.54	7.47	1.89	8.69	2.27	9.30	2.48	9.91	2.70	11.13	3.15	12.3	3.65
	42	6.26	1.61	7.47	2.00	8.69	2.38	9.30	2.61	9.91	2.83	11.13	3.35	12.3	3.88
	44	6.26	1.67	7.47	2.11	8.69	2.49	9.30	2.70	9.91	2.96	11.13	3.53	12.3	4.10
	46	6.26	1.76	7.47	2.20	8.69	2.58	9.30	2.81	9.91	3.12	11.13	3.66	12.3	4.32
50%	10	5.23	0.82	6.26	0.94	7.25	1.08	7.75	1.15	8.25	1.22	9.24	1.37	10.3	1.53
	12	5.23	0.82	6.26	0.96	7.25	1.10	7.75	1.16	8.25	1.24	9.24	1.39	10.3	1.55
	14	5.23	0.83	6.26	0.97	7.25	1.11	7.75	1.19	8.25	1.26	9.24	1.42	10.3	1.58
	16	5.23	0.85	6.26	0.98	7.25	1.13	7.75	1.21	8.25	1.28	9.24	1.44	10.3	1.61
	18	5.23	0.86	6.26	1.00	7.25	1.15	7.75	1.22	8.25	1.30	9.24	1.47	10.3	1.64
	20	5.23	0.87	6.26	1.01	7.25	1.16	7.75	1.24	8.25	1.33	9.24	1.49	10.3	1.67
	21	5.23	0.88	6.26	1.02	7.25	1.18	7.75	1.25	8.25	1.34	9.24	1.51	10.3	1.69
	23	5.23	0.89	6.26	1.04	7.25	1.19	7.75	1.28	8.25	1.36	9.24	1.53	10.3	1.72
	25	5.23	0.90	6.26	1.05	7.25	1.22	7.75	1.30	8.25	1.41	9.24	1.61	10.3	1.84
	27	5.23	0.92	6.26	1.10	7.25	1.29	7.75	1.39	8.25	1.49	9.24	1.72	10.3	1.96
	29	5.23	0.97	6.26	1.16	7.25	1.36	7.75	1.47	8.25	1.59	9.24	1.83	10.3	2.09
	31	5.23	1.02	6.26	1.22	7.25	1.44	7.75	1.57	8.25	1.69	9.24	1.94	10.3	2.22
	33	5.23	1.08	6.26	1.30	7.25	1.53	7.75	1.66	8.25	1.79	9.24	2.06	10.3	2.36
	35	5.23	1.15	6.26	1.37	7.25	1.62	7.75	1.75	8.25	1.89	9.24	2.19	10.3	2.51
	37	5.23	1.21	6.26	1.45	7.25	1.72	7.75	1.86	8.25	2.01	9.24	2.33	10.3	2.67
	39	5.23	1.27	6.26	1.53	7.25	1.82	7.75	1.97	8.25	2.13	9.24	2.47	10.3	2.83
	42	5.23	1.34	6.26	1.62	7.25	1.90	7.75	2.09	8.25	2.25	9.24	2.64	10.3	3.01
	44	5.23	1.41	6.26	1.70	7.25	1.99	7.75	2.21	8.25	2.31	9.24	2.82	10.3	3.18
	46	5.23	1.48	6.26	1.79	7.25	2.08	7.75	2.32	8.25	2.38	9.24	2.99	10.3	3.36

## Note:

- is shown as reference
- In cooling mode, avoid the outdoor air temperature range from 42-46 degree C, when selecting the models
- The above table shows the average value of conditions may operate
- It is recommended to connect less than 130%

**Heating**

Combination (%) (Capacity index)	Outdoor Air temperature (°C DB)		Indoor temperature(°C WB)											
			16		18		20		21		22		24	
	TC °C DB	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
130%	-19.8	-20	11.01	3.37	10.95	3.61	10.90	3.85	10.90	3.96	10.85	4.08	10.85	4.32
	-18.8	-19	11.17	3.44	11.12	3.68	11.12	3.91	11.06	4.03	11.06	4.14	11.01	4.38
	-16.7	-17	11.60	3.61	11.55	3.83	11.49	4.06	11.49	4.17	11.49	4.28	11.44	4.50
	-13.7	-15	12.09	3.77	12.04	3.99	11.98	4.21	11.98	4.31	11.93	4.42	11.93	4.64
	-11.8	-13	12.58	3.94	12.58	4.15	12.52	4.35	12.47	4.46	12.47	4.57	12.41	4.77
	-9.8	-11	13.17	4.11	13.11	4.31	13.06	4.51	13.06	4.61	13.06	4.71	13.01	4.91
	-9.5	-10	13.49	4.20	13.44	4.39	13.38	4.58	13.38	4.68	13.33	4.78	13.33	4.97
	-8.5	-9.1	13.76	4.27	13.71	4.46	13.71	4.65	13.65	4.75	13.65	4.84	13.60	5.03
	-7	-7.6	14.25	4.40	14.25	4.58	14.19	4.76	14.19	4.86	14.14	4.94	14.08	5.13
	-5	-5.6	15.00	4.57	14.95	4.74	14.89	4.91	14.89	5.00	14.84	5.08	14.84	5.25
	-3	-3.7	15.71	4.71	15.65	4.88	15.65	5.04	15.60	5.13	15.60	5.21	15.54	5.37
	0	-0.7	16.95	4.94	16.95	5.10	16.89	5.25	16.89	5.30	16.84	5.40	16.84	5.55
	3	2.2	18.29	5.15	18.24	5.29	18.19	5.43	18.19	5.50	18.19	5.58	18.13	5.71
	5	4.1	19.21	5.28	19.16	5.41	19.16	5.54	19.11	5.61	19.11	5.68	19.05	5.81
	7	6	20.18	5.40	20.13	5.53	20.13	5.66	20.08	5.72	20.08	5.78	19.27	5.55
	9	7.9	21.21	5.51	21.15	5.64	21.15	5.75	21.10	5.82	20.67	5.69	19.27	5.22
	11	9.8	22.29	5.62	22.24	5.74	22.13	5.81	21.37	5.58	20.67	5.35	19.27	4.91
	13	11.8	23.48	5.73	23.42	5.84	22.13	5.45	21.37	5.23	20.67	5.02	19.27	4.61
	15	13.7	24.61	5.83	23.53	5.53	22.13	5.13	21.37	4.93	20.67	4.73	19.27	4.35
120%	-19.8	-20	10.96	3.69	10.90	3.91	10.85	4.13	10.85	4.24	10.85	4.35	10.79	4.57
	-18.8	-19	11.12	3.76	11.06	3.98	11.06	4.19	11.01	4.30	11.01	4.41	10.96	4.63
	-16.7	-17	11.55	3.91	11.50	4.12	11.42	4.32	11.44	4.43	11.44	4.53	11.39	4.74
	-13.7	-15	12.04	4.06	11.98	4.26	11.93	4.46	11.93	4.57	11.93	4.66	11.87	4.86
	-11.8	-13	12.52	4.22	12.52	4.41	12.47	4.60	12.47	4.70	12.41	4.79	12.41	4.99
	-9.8	-11	13.11	4.38	13.06	4.56	13.06	4.75	13.01	4.84	13.01	4.93	12.95	5.11
	-9.5	-10	13.44	4.46	13.39	4.64	13.33	4.81	13.33	4.91	13.33	4.99	13.28	5.17
	-8.5	-9.1	13.71	4.53	13.65	4.70	13.65	4.88	13.60	4.96	13.60	5.06	13.55	5.23
	-7	-7.6	14.19	4.65	14.19	4.81	14.14	4.98	14.14	5.07	14.09	5.15	14.09	5.32
	-5	-5.6	14.95	4.79	14.90	4.96	14.84	5.12	14.84	5.20	14.84	5.28	14.79	5.43
	-3	-3.7	15.65	4.94	15.65	5.09	15.60	5.24	15.60	5.32	15.54	5.40	15.54	5.54
	0	-0.7	16.89	5.15	16.89	5.29	16.84	5.43	16.84	5.50	16.78	5.57	16.78	5.71
	3	2.2	18.24	5.34	18.19	5.47	18.19	5.60	18.13	5.67	18.13	5.73	17.76	5.70
	5	4.1	19.16	5.46	19.11	5.58	19.11	5.71	19.05	5.77	19.05	5.83	17.76	5.35
	7	6	20.13	5.57	20.13	5.69	20.08	5.80	19.75	5.72	19.11	5.49	17.76	5.04
	9	7.9	21.16	5.68	21.10	5.79	20.40	5.60	19.75	5.38	19.11	5.16	17.76	4.74
	11	9.8	22.24	5.78	21.70	5.68	20.40	5.27	19.75	5.06	19.11	4.86	17.76	4.47
	13	11.8	23.04	5.72	21.70	5.33	20.40	4.94	19.75	4.75	19.11	4.57	17.76	4.20
	15	13.7	23.04	5.39	21.70	5.02	20.40	4.66	19.75	4.48	19.11	4.31	17.76	3.96
110%	-19.8	-20	10.90	4.01	10.85	4.21	10.79	4.42	10.79	4.52	10.80	4.62	10.74	4.82
	-18.8	-19	11.06	4.08	11.01	4.27	11.01	4.47	11.01	4.57	10.96	4.67	10.96	4.87
	-16.7	-17	11.49	4.21	11.44	4.40	11.60	4.60	11.39	4.69	11.39	4.79	11.33	4.97
	-13.7	-15	11.98	4.36	11.93	4.54	11.87	4.72	11.87	4.81	11.87	4.91	11.82	5.09
	-11.8	-13	12.47	4.50	12.47	4.68	12.41	4.85	12.41	4.94	12.36	5.02	12.36	5.20
	-9.8	-11	13.06	4.65	13.01	4.81	13.01	4.98	12.95	5.07	12.95	5.15	12.95	5.32
	-9.5	-10	13.38	4.72	13.33	4.88	13.28	5.05	13.28	5.13	13.28	5.21	13.22	5.37
	-8.5	-9.1	13.65	4.78	13.60	4.94	13.60	5.10	13.55	5.19	13.55	5.27	13.55	4.80
	-7	-7.6	14.14	4.89	14.14	5.04	14.09	5.20	14.09	5.28	14.09	5.35	14.03	5.51
	-5	-5.6	14.90	5.03	14.84	5.18	14.79	5.32	14.79	5.40	14.79	5.47	14.73	5.62
	-3	-3.7	15.60	5.16	15.60	5.30	15.54	5.44	15.54	5.51	15.49	5.58	15.49	5.72
	0	-0.7	16.84	5.35	16.84	5.48	16.79	5.61	16.79	5.67	16.79	5.74	16.30	5.63
	3	2.2	18.19	5.53	18.13	5.65	18.13	5.77	18.08	5.82	17.49	5.59	16.30	5.12
	5	4.1	19.11	5.64	19.11	5.75	18.73	5.70	18.08	5.47	17.49	5.25	16.30	4.82
	7	6	20.08	5.74	19.91	5.78	18.73	5.35	18.08	5.14	17.49	4.94	16.30	4.53
	9	7.9	21.10	5.84	19.91	5.43	18.73	5.04	18.08	4.84	17.49	4.65	16.30	4.27
	11	9.8	21.10	5.49	19.91	5.11	18.73	4.74	18.08	4.56	17.49	4.38	16.30	4.03
	13	11.8	21.10	5.15	19.91	4.79	18.73	4.45	18.08	4.29	17.49	4.12	16.30	3.80
	15	13.7	21.10	4.57	19.91	4.52	18.73	4.21	18.08	4.05	17.49	3.90	16.30	3.59
100%	-19.8	-20	10.85	4.34	10.79	4.52	10.79	4.70	10.74	4.79	10.74	4.88	10.69	5.07
	-18.8	-19	11.01	4.39	11.01	4.57	10.95	4.75	10.95	4.84	10.90	4.94	10.90	5.12
	-16.7	-17	11.44	4.52	11.39	4.69	11.39	4.86	11.33	4.95	11.33	5.04	11.33	5.21

	-13.7	-15	11.93	4.65	11.87	4.81	11.82	4.98	11.82	5.07	11.82	5.15	11.77	5.31
	-11.8	-13	12.41	4.78	12.41	4.94	12.36	5.10	12.36	5.18	12.36	5.26	12.30	5.42
	-9.8	-11	13.01	4.91	12.95	5.07	12.95	5.22	12.95	5.30	12.90	5.37	12.90	5.52
	-9.5	-10	13.33	4.98	13.28	5.13	13.28	5.28	13.22	5.35	13.22	5.43	13.17	5.58
	-8.5	-9.1	13.60	5.04	13.55	5.18	13.55	5.33	13.55	5.40	13.49	5.48	13.49	5.62
	-7	-7.6	14.09	5.14	14.09	5.28	14.03	5.41	14.03	5.49	14.03	5.56	13.98	5.70
	-5	-5.6	14.84	5.27	14.79	5.40	14.79	5.53	14.73	5.59	14.73	5.66	14.68	5.80
	-3	-3.7	15.54	5.38	15.54	4.89	15.49	5.64	15.49	5.70	15.49	5.76	14.84	5.52
	0	-0.7	16.78	5.56	16.78	5.67	16.73	5.79	16.46	5.70	15.92	5.46	14.84	5.01
	3	2.2	18.13	5.72	18.08	5.82	17.00	5.39	16.46	5.18	15.92	4.97	14.84	4.57
	5	4.1	19.05	5.82	18.08	5.47	17.00	5.07	16.46	4.87	15.92	4.68	14.84	4.31
	7	6	19.16	5.53	18.08	5.14	17.00	4.77	16.46	4.59	15.92	4.41	14.84	4.06
	9	7.9	19.16	5.19	18.08	4.84	17.00	4.49	16.46	4.27	15.92	4.16	14.84	3.83
	11	9.8	19.16	4.89	18.08	4.56	17.00	4.24	16.46	4.08	15.92	3.92	14.84	3.62
	13	11.8	19.16	4.59	18.08	4.29	17.00	3.99	16.46	3.84	15.92	3.70	14.84	3.41
	15	13.7	19.16	4.33	18.08	4.05	17.00	3.77	16.46	3.63	15.92	3.49	14.84	3.23
90%	-19.8	-20	10.77	4.66	10.72	4.82	10.72	4.99	10.67	5.07	10.67	5.15	10.67	5.32
	-18.8	-19	10.94	4.71	10.94	4.87	10.88	5.04	10.88	5.12	10.88	5.20	10.83	5.36
	-16.7	-17	11.37	4.83	11.31	4.98	11.31	5.14	11.31	5.22	11.26	5.29	11.26	5.44
	-13.7	-15	11.85	4.94	11.80	5.09	11.80	5.24	11.74	5.31	11.74	5.39	11.74	5.54
	-11.8	-13	12.34	5.06	12.34	5.20	12.28	5.35	12.28	5.42	12.28	5.49	12.23	5.63
	-9.8	-11	12.93	5.18	12.93	5.32	12.87	5.45	12.87	5.52	12.87	5.59	12.82	5.73
	-9.5	-10	13.25	5.24	13.20	5.38	13.20	5.51	13.15	5.58	13.15	5.64	13.15	5.77
	-8.5	-9.1	13.52	5.30	13.52	5.43	13.47	5.56	13.47	5.62	13.47	5.69	13.31	5.74
	-7	-7.6	14.01	5.38	14.01	5.51	13.95	5.64	13.95	5.70	13.95	5.76	13.31	5.48
	-5	-5.6	14.76	5.50	14.71	5.62	14.71	5.74	14.65	5.80	14.28	5.62	13.31	5.15
	-3	-3.7	15.46	5.61	15.46	5.72	15.30	5.74	14.76	5.51	14.28	5.29	13.31	4.86
	0	-0.7	16.76	5.77	16.27	5.62	15.30	5.21	14.76	5.01	14.28	4.81	13.31	4.42
	3	2.2	17.24	5.49	16.27	5.12	15.30	4.75	14.76	4.57	14.28	4.39	13.31	4.04
	5	4.1	17.24	5.17	16.27	4.81	15.30	4.47	14.76	4.30	14.28	4.14	13.31	3.81
	7	6	17.24	4.86	16.27	4.53	15.30	4.21	14.76	4.06	14.28	3.90	13.31	3.60
	9	7.9	17.24	4.58	16.27	4.27	15.30	3.97	14.76	3.83	14.28	3.69	13.31	3.40
	11	9.8	17.24	4.31	16.27	4.03	15.30	3.75	14.76	3.62	14.28	3.48	13.31	3.22
	13	11.8	17.24	4.06	16.27	3.80	15.30	3.54	14.76	3.41	14.28	3.29	13.31	3.04
	15	13.7	17.24	3.83	16.27	3.59	15.30	3.35	14.76	3.23	14.28	3.12	13.31	2.89
80%	-19.8	-20	10.74	4.98	10.69	5.12	10.69	5.27	10.69	5.35	10.63	5.42	10.63	5.56
	-18.8	-19	10.90	5.02	10.90	5.17	10.85	5.31	10.85	5.39	10.85	5.46	10.79	5.61
	-16.7	-17	11.33	5.13	11.28	5.27	11.28	5.41	11.28	5.48	11.28	5.54	11.23	5.68
	-13.7	-15	11.82	5.23	11.77	5.36	11.77	5.50	11.77	5.56	11.71	5.63	11.71	5.77
	-11.8	-13	12.31	5.34	12.31	5.47	12.25	5.59	12.25	5.66	12.25	5.72	11.87	5.57
	-9.8	-11	12.90	5.45	12.90	5.57	12.84	5.69	12.84	5.75	12.74	5.74	11.87	5.26
	-9.5	-10	13.22	5.50	13.17	5.62	13.17	5.74	13.17	5.80	12.74	5.57	11.87	5.10
	-8.5	-9.1	13.49	5.55	12.54	5.67	13.44	5.78	13.17	5.65	12.74	5.42	11.87	4.97
	-7	-7.6	13.98	5.63	13.98	5.74	13.60	5.62	13.17	5.40	12.74	5.18	11.87	4.75
	-5	-5.6	14.73	5.73	14.46	5.70	13.60	5.28	13.17	5.07	12.74	4.87	11.87	4.47
	-3	-3.7	15.33	5.76	14.46	5.36	13.60	4.97	13.17	4.78	12.74	4.59	11.87	4.22
	0	-0.7	15.33	5.23	14.46	4.87	13.60	4.52	13.17	4.35	12.74	4.18	11.87	3.85
	3	2.2	15.33	4.76	14.46	4.44	13.60	4.13	13.17	3.98	12.74	3.83	11.87	3.53
	5	4.1	15.33	4.49	14.46	4.19	13.60	3.90	13.17	3.75	12.74	3.62	11.87	3.34
	7	6	15.33	4.22	14.46	3.95	13.60	3.68	13.17	3.55	12.74	3.42	11.87	3.16
	9	7.9	15.33	3.99	14.46	3.73	13.60	3.47	13.17	3.35	12.74	3.23	11.87	2.99
	11	9.8	15.33	3.77	14.46	3.52	13.60	3.29	13.17	3.17	12.74	3.06	11.87	2.84
	13	11.8	15.33	3.55	14.46	3.33	13.60	3.11	13.17	3.00	12.74	2.89	11.87	2.68
	15	13.7	15.33	3.36	14.46	3.15	13.60	2.95	13.17	2.84	12.74	2.74	11.87	2.55
70%	-19.8	-20	10.66	5.30	10.61	5.43	10.61	5.56	10.61	5.62	10.61	5.69	10.34	5.62
	-18.8	-19	10.82	5.35	10.82	5.47	10.77	5.59	10.77	5.66	10.77	5.72	10.34	5.51
	-16.7	-17	11.25	5.43	11.25	5.56	11.20	5.67	11.20	5.74	11.09	5.11	10.34	5.25
	-13.7	-15	11.74	5.53	11.68	5.64	11.68	5.76	11.47	5.67	11.09	5.44	10.34	4.99
	-11.8	-13	12.22	5.62	12.22	5.73	11.90	5.59	11.47	5.38	11.09	5.16	10.34	4.73
	-9.8	-11	12.82	5.71	12.65	5.71	11.90	5.28	11.47	5.08	11.09	4.88	10.34	4.48
	-9.5	-10	13.14	5.76	12.65	5.54	11.90	5.13	11.47	4.93	11.09	4.74	10.34	4.35
	-8.5	-9.1	13.41	5.79	12.65	5.39	11.90	4.99	11.47	4.80	11.09	4.61	10.34	4.24
	-7	-7.6	13.41	5.53	12.65	5.15	11.90	4.78	11.47	4.60	11.09	4.42	10.34	4.06
	-5	-5.6	13.41	5.20	12.65	4.84	11.90	4.50	11.47	4.32	11.09	5.11	10.34	3.83
	-3	-3.7	13.41	4.89	12.65	4.57	11.90	4.24	11.47	4.08	11.09	3.93	10.34	3.62

	0	-0.7	13.41	4.45	12.65	4.16	11.90	3.87	11.47	3.73	11.09	3.59	10.34	3.32
	3	2.2	13.41	4.07	12.65	3.81	11.90	3.55	11.47	3.42	11.09	3.30	10.34	3.05
	5	4.1	13.41	3.84	12.65	3.59	11.90	3.36	11.47	3.23	11.09	3.12	10.34	2.89
	7	6	13.41	3.63	12.65	3.40	11.90	3.17	11.47	3.06	11.09	2.95	10.34	2.74
	9	7.9	13.41	3.43	12.65	3.22	11.90	3.00	11.47	2.90	11.09	2.80	10.34	2.60
	11	9.8	13.41	3.25	12.65	3.04	11.90	2.85	11.47	2.75	11.09	2.66	10.34	2.47
	13	11.8	13.41	3.07	12.65	2.88	11.90	2.69	11.47	2.61	11.09	2.52	10.34	2.34
	15	13.7	13.41	2.91	12.65	2.73	11.90	2.56	11.47	2.48	11.09	2.39	10.34	2.23
60%	-19.8	-20	10.63	5.62	10.58	5.73	10.20	5.51	9.88	5.30	9.55	5.09	8.90	4.66
	-18.8	-19	10.79	5.66	10.79	5.77	10.20	5.40	9.88	5.18	9.55	4.97	8.90	4.57
	-16.7	-17	11.23	5.74	10.85	5.56	10.20	5.15	9.88	4.95	9.55	4.75	8.90	4.37
	-13.7	-15	11.50	5.67	10.85	5.28	10.20	4.89	9.88	4.71	9.55	4.52	8.90	4.16
	-11.8	-13	11.50	5.37	10.85	5.00	10.20	4.64	9.88	4.47	9.55	4.29	8.90	3.97
	-9.8	-11	11.50	5.07	10.85	4.73	10.20	4.39	9.88	4.22	9.55	4.06	8.90	3.75
	-9.5	-10	11.50	4.93	10.85	4.60	10.20	4.27	9.88	4.11	9.55	3.95	8.90	3.64
	-8.5	-9.1	11.50	4.80	10.85	4.48	10.20	4.16	9.88	4.01	9.55	3.85	8.90	3.56
	-7	-7.6	11.50	4.59	10.85	4.29	10.20	3.98	9.88	3.84	9.55	3.69	8.90	3.41
	-5	-5.6	11.50	4.32	10.85	4.04	10.20	3.76	9.88	3.62	9.55	3.49	8.90	3.23
	-3	-3.7	11.50	4.08	10.85	3.82	10.20	3.56	9.88	3.43	9.55	3.30	8.90	3.05
	0	-0.7	11.50	3.73	10.85	3.49	10.20	3.26	9.88	3.15	9.55	3.03	8.90	2.81
	3	2.2	11.50	3.42	10.85	3.21	10.20	3.00	9.88	2.89	9.55	2.79	8.90	2.59
	5	4.1	11.50	3.23	10.85	3.04	10.20	2.84	9.88	2.74	9.55	2.65	8.90	2.46
	7	6	11.50	3.06	10.85	2.87	10.20	2.69	9.88	2.60	9.55	2.51	8.90	2.34
	9	7.9	11.50	2.90	10.85	2.73	10.20	2.55	9.88	2.47	9.55	2.38	8.90	2.22
	11	9.8	11.50	2.75	10.85	2.59	10.20	2.43	9.88	2.35	9.55	2.27	8.90	2.12
	13	11.8	11.50	2.60	10.85	2.45	10.20	2.30	9.88	2.23	9.55	2.16	8.90	2.01
	15	13.7	11.50	2.48	10.85	2.33	10.20	2.19	9.88	2.12	9.55	2.06	8.90	1.92
50%	-19.8	-20	9.58	5.12	9.04	4.76	8.50	4.42	8.18	4.26	7.91	4.09	7.37	3.77
	-18.8	-19	9.58	5.01	9.04	4.66	8.50	4.34	8.18	4.17	7.91	4.01	7.37	3.70
	-16.7	-17	9.58	4.78	9.04	4.45	8.50	4.14	8.18	3.99	7.91	3.84	7.37	3.54
	-13.7	-15	9.58	4.55	9.04	4.24	8.50	3.95	8.18	3.80	7.91	3.66	7.37	3.38
	-11.8	-13	9.58	4.32	9.04	4.03	8.50	3.75	8.18	3.62	7.91	3.48	7.37	3.22
	-9.8	-11	9.58	4.09	9.04	3.82	8.50	3.56	8.18	3.43	7.91	3.31	7.37	3.06
	-9.5	-10	9.58	3.98	9.04	3.72	8.50	3.47	8.18	3.34	7.91	3.22	7.37	2.98
	-8.5	-9.1	9.58	3.88	9.04	3.63	8.50	3.38	8.18	3.26	7.91	3.15	7.37	2.91
	-7	-7.6	9.58	3.72	9.04	3.48	8.50	3.25	8.18	3.13	7.91	3.02	7.37	2.80
	-5	-5.6	9.58	3.51	9.04	3.29	8.50	3.07	8.18	2.97	7.91	2.86	7.37	2.65
	-3	-3.7	9.58	3.32	9.04	3.12	8.50	2.91	8.18	2.81	7.91	2.71	7.37	2.52
	0	-0.7	9.58	3.05	9.04	2.86	8.50	2.68	8.18	2.59	7.91	2.50	7.37	2.33
	3	2.2	9.58	2.81	9.04	2.64	8.50	2.47	8.18	2.39	7.91	2.31	7.37	2.16
	5	4.1	9.58	2.66	9.04	2.50	8.50	2.35	8.18	2.27	7.91	2.20	7.37	2.05
	7	6	9.58	2.53	9.04	2.38	8.50	2.24	8.18	2.16	7.91	2.09	7.37	1.96
	9	7.9	9.58	2.40	9.04	2.26	8.50	2.12	8.18	2.06	7.91	1.99	7.37	1.86
	11	9.8	9.58	2.28	9.04	2.15	8.50	2.03	8.18	1.96	7.91	1.90	7.37	1.78
	13	11.8	9.58	2.17	9.04	2.04	8.50	1.93	8.18	1.87	7.91	1.81	7.37	1.70
	15	13.7	9.58	2.06	9.04	1.95	8.50	1.84	8.18	1.78	7.91	1.73	7.37	1.62

## Note:

- is shown as reference
- In heating mode, avoid the outdoor air temperature range from -15 to -20 degree C, when selecting the models
- The above table shows the average value of conditions may operate
- It is recommended to connect less than 130%

## 8. Electric Characteristics

Model	Outdoor Unit				Power Supply		Compressor	OFM	
	Hz	Voltage	Min.	Max.	TOCA	MFA	RLA	kW	FLA
<b>MVUH120A-VA1</b>	50	220V	198V	242V	30	30A	13.5	0.2	1.6
<b>MVUH140A-VA1</b>	50	220V	198V	242V	30	30A	13.5	0.2	1.6
<b>MVUH160A-VA1</b>	50	220V	198V	242V	30	30A	16.1	0.2	1.8

**Remark:**

TOCA: Total Over-current Amps. (A)

MFA: Max. Fuse Amps. (A)

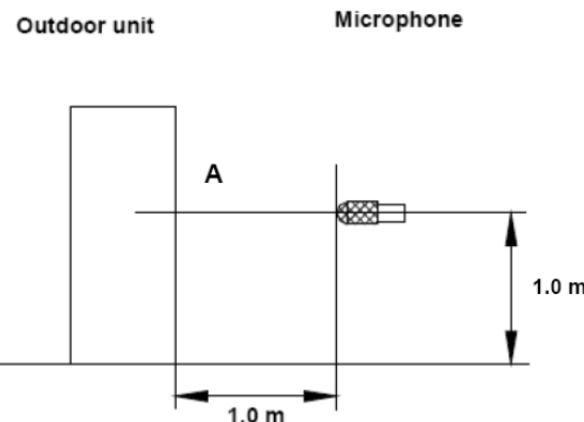
RLA: Rated Locked Amps. (A)

OFM: Outdoor Fan Motor.

FLA: Full Load Amps. (A)

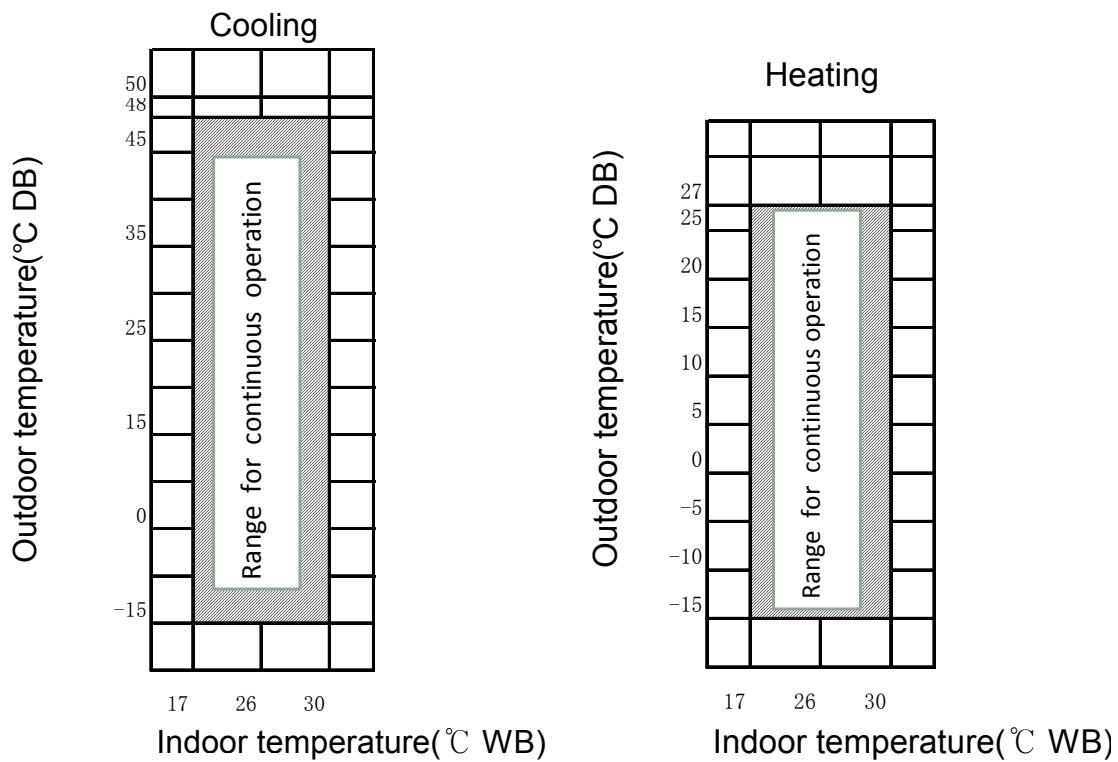
KW: Rated Motor Output (KW)

## 9. Sound Levels



Model	Noise level dB(A)	
	High speed	Low speed
<b>MVUH120A-VA1</b>	57	54
<b>MVUH140A-VA1</b>	57	54
<b>MVUH160A-VA1</b>	57	54

## 10. Operation Limits



## 11. Troubleshooting

### 11.1 Troubles and causes of air conditioner

If one of the following malfunctions occur, stop operation, shut off the power, and contact with your dealer.

- The operation lamp is flashing rapidly (twice every second) This lamp is still flashing rapidly after turn off the power and turn on again.
- Remote controller receives malfunction or the button does not work well.
- A safety device such as a fuse, a breaker frequently actuates.
- Obstacles and water enter the unit.
- Water leaks from indoor unit.
- Other malfunctions.

If the system does not properly operate except the above mentioned cases or the above mentioned malfunctions is evident, investigate the system according to the following procedures.

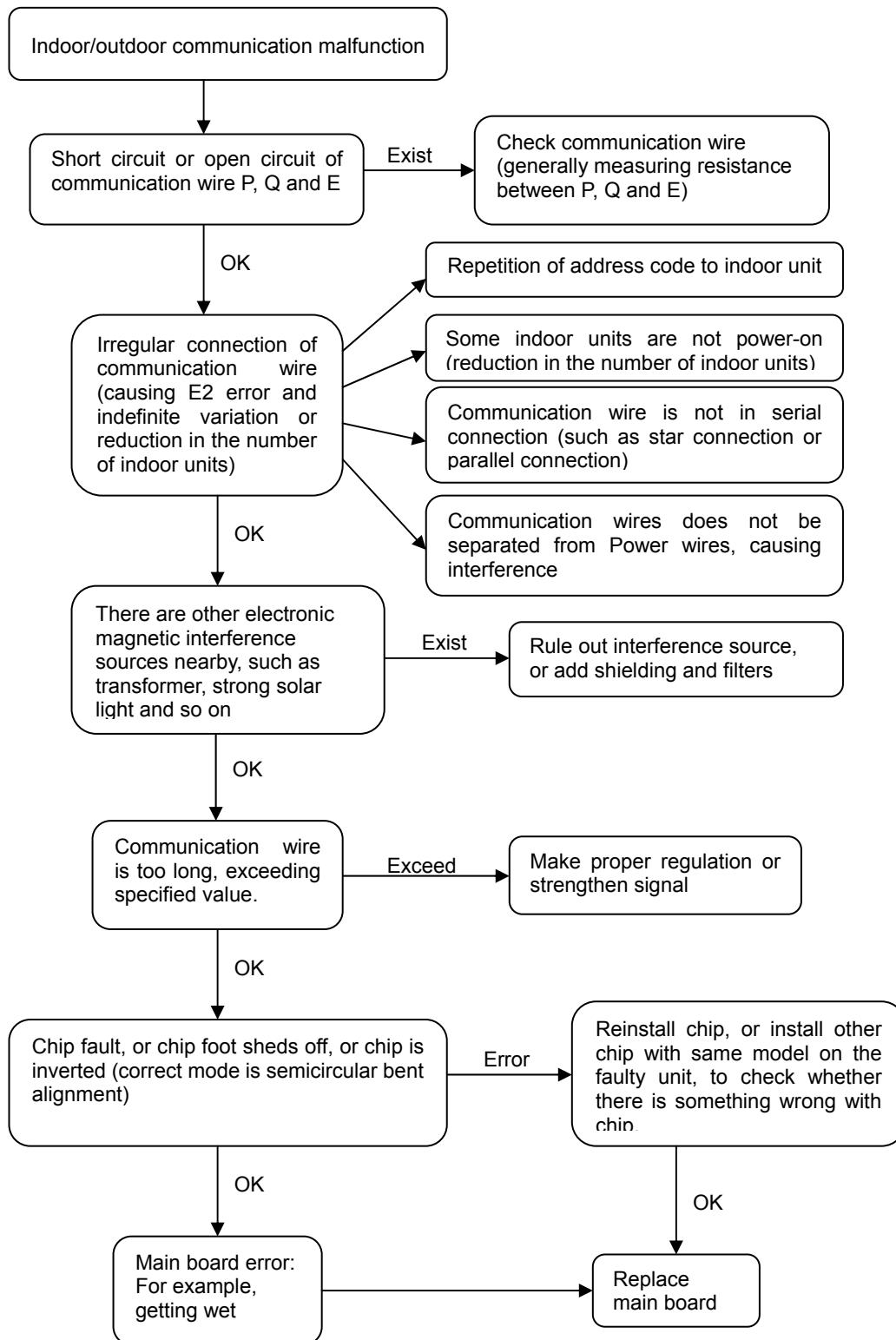
Symptoms	Causes	Solution
Unit does not start	<ul style="list-style-type: none"> <li>● Power failure.</li> <li>● Power switch is off.</li> <li>● Fuse of power switch may have burned.</li> <li>● Batteries of remote controller exhausted or other problem of controller.</li> </ul>	<ul style="list-style-type: none"> <li>● Wait for the comeback of power..</li> <li>● Switch on the power.</li> <li>● Relocation.</li> <li>● Replace the batteries or check the controller.</li> </ul>
Air flowing normally but completely can it cooling	<ul style="list-style-type: none"> <li>● Temperature is not set correctly.</li> <li>● Be in 3 minutes protection of compressor</li> </ul>	<ul style="list-style-type: none"> <li>● Set the temperature properly.</li> <li>● Wait.</li> </ul>
Units start or stop frequently	<ul style="list-style-type: none"> <li>● Refrigerant is too little or too much.</li> <li>● Air or no concreting gas in the refrigerating circuit.</li> <li>● Compressor is malfunction.</li> <li>● Voltage is too high or too low.</li> <li>● System circuit is blocked.</li> </ul>	<ul style="list-style-type: none"> <li>● Check leakage, and rightly recharge refrigerant.</li> <li>● Vacuum and recharge refrigerant.</li> <li>● Maintenance or change compressor.</li> <li>● Install manostat.</li> <li>● Find reasons and solution.</li> </ul>
Units start or stop frequently	<ul style="list-style-type: none"> <li>● Refrigerant is too little or too much.</li> <li>● Air or no concreting gas in the refrigerating circuit.</li> <li>● Compressor is malfunction.</li> <li>● Voltage is too high or too low.</li> <li>● System circuit is blocked.</li> </ul>	<ul style="list-style-type: none"> <li>● Check leakage, and rightly recharge refrigerant.</li> <li>● Vacuum and recharge refrigerant.</li> <li>● Maintenance or change compressor.</li> <li>● Install manostat.</li> <li>● Find reasons and solution.</li> </ul>
Low cooling effect	<ul style="list-style-type: none"> <li>● Outdoor unit and indoor unit heat exchanger is dirty.</li> <li>● The air filter is dirty.</li> <li>● Inlet/outlet of indoor/outdoor units is blocked.</li> <li>● Doors and windows are open.</li> <li>● Sunlight directly shine.</li> <li>● Too much heat resource.</li> <li>● Outdoor temp. is too high.</li> <li>● Leakage of refrigerant or lack of refrigerant.</li> </ul>	<ul style="list-style-type: none"> <li>● Clean the heat exchanger.</li> <li>● Clean the air filter.</li> <li>● Eliminate all dirties and make air smooth.</li> <li>● Close doors and windows.</li> <li>● Make curtains in order to shelter from sunshine.</li> <li>● Reduce heat source.</li> <li>● AC cooling capacity reduces normal).</li> <li>● Check leakage and rightly recharge</li> <li>● Refrigerant.</li> </ul>
Low heating effect	<ul style="list-style-type: none"> <li>● Outdoor temperature is lower than 7 C</li> <li>● Doors and windows not completely closed.</li> <li>● Leakage of refrigerant or lack of refrigerant.</li> </ul>	<ul style="list-style-type: none"> <li>● Use heating device.</li> <li>● Close doors and windows.</li> <li>● Check leakage and rightly recharge refrigerant.</li> </ul>

## 11.2 Troubles and causes of remote controller

Before asking for serving or repairing, check the following points.

Symptoms	Causes	Solution
The fan speed can not be changed.	Check whether the MODE indicated on the display is "AUTO"	When the automatic mode is selected, the air conditioner will automatically change the fan speed.
	Check whether the MODE indicated on the display is "DRY"	When dry operation is selected, the air conditioner automatically change the fan speed. The fan speed can be selected during "COOL", "FAN ONLY", and "HEAT"
The remote controller signal is not transmitted even when the ON/OFF button is pushed.	Check whether the batteries in the remote controller are exhausted.	The power supply is off.
The TEMP .Indicator does not come on.	Check whether the MODE indicated on the display is FAN ONLY	The temperature cannot be set during FAN mode.
The indication on the display disappears after a lapse of time.	Check whether the timer operation has come to an end when the TIMER OFF is indicated on the display.	The air conditioner operation will stop up to the set time
The TIMER ON indicator goes off after a lapse of certain time.	Check whether the timer operation is started when the TIMER ON is indicated on the display.	Up to the set time, the air conditioner will automatically start and the appropriate indicator will go off.
No receiving tone sounds from the indoor unit even when the ON/OFF button is pressed.	Check whether the signal transmitter of the remote controller is properly directed to the infrared signal receiver of the indoor unit when the ON/OFF button is pressed.	Directly transmit the signal transmitter of the remote controller to the infrared signal receiver of the indoor unit, and then repeatedly push the ON/OFF button twice.

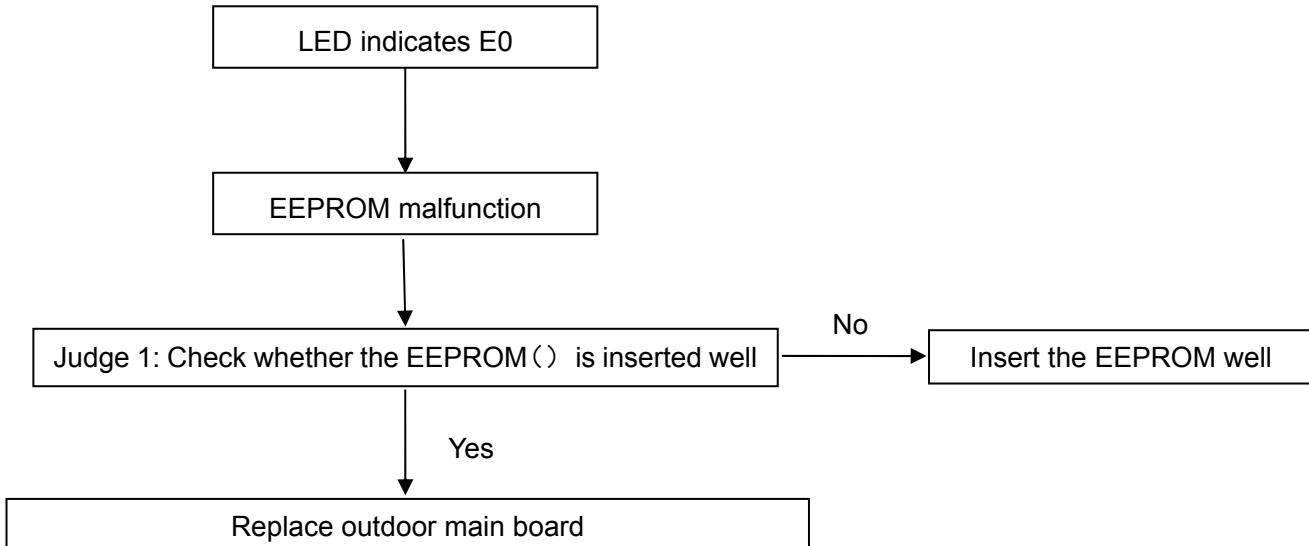
## ① Indoor/outdoor communication malfunction

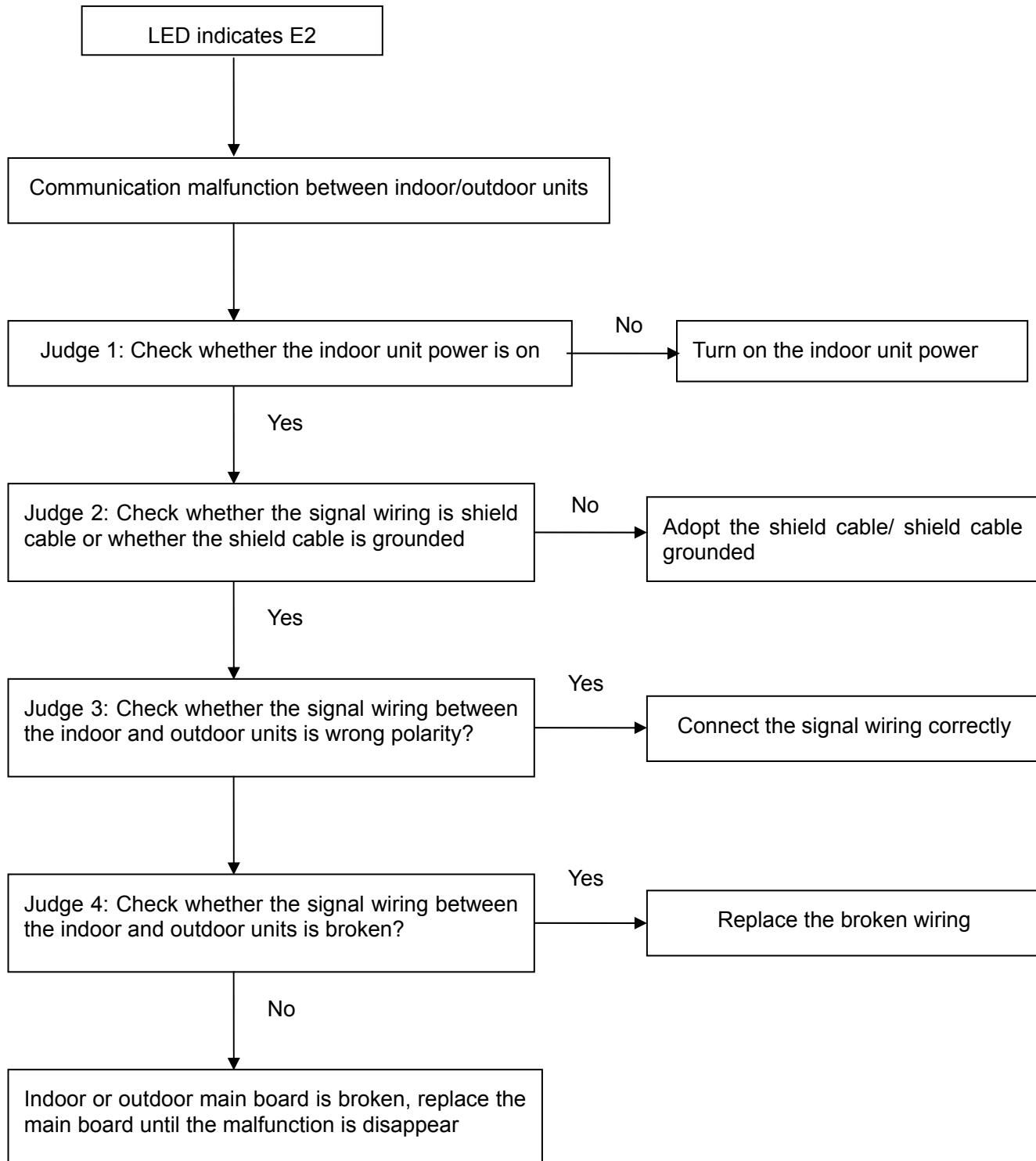


### 11.3 Malfunction Code of Outdoor unit

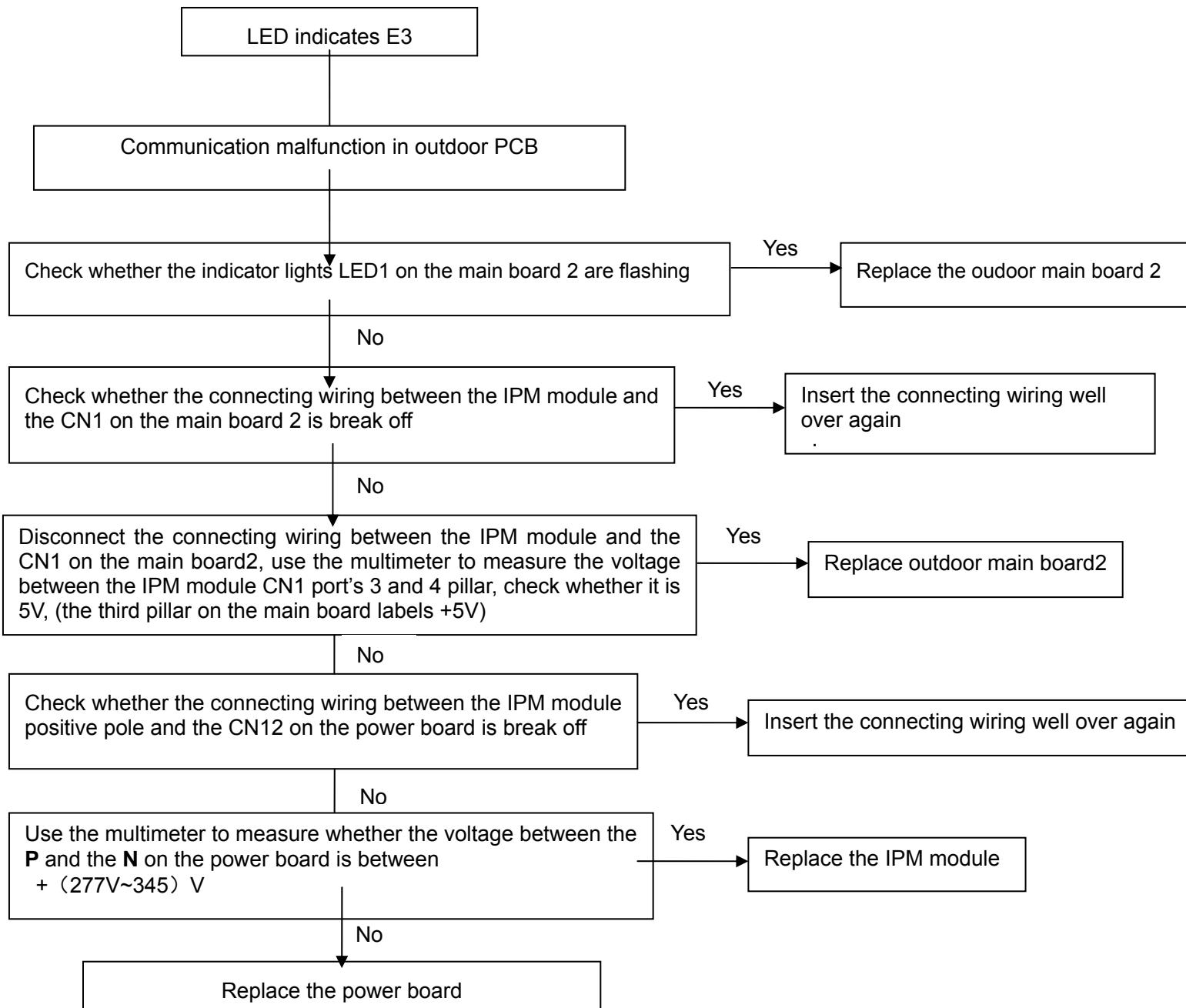
Display	Malfunction or Protection
E0	EEPROM malfunction
E2	Communication fault of the outdoor chip and the indoor chip
E3	Communication fault of 9177and IPDU
E4	T3, T4 sensor fault
E5	Voltage protection fault
E6	Direct-current fan fault
E7	Heating fan fault in the area A lasts for 5 minutes
E8	There are two times E6 fault in 10 minutes (recovery after power off)
P0	The Heat sink high temperature protection
P1	High pressure protection
P2	Low pressure protection
P3	Compressor current protection
P4	Discharge temperature protection
P5	Outdoor condenser T3 high temperature protection
P6	IPDU modules protection
P7	Evaporator T2 high temperature protection
P8	Typhoon protection(recovery after Typhoon)

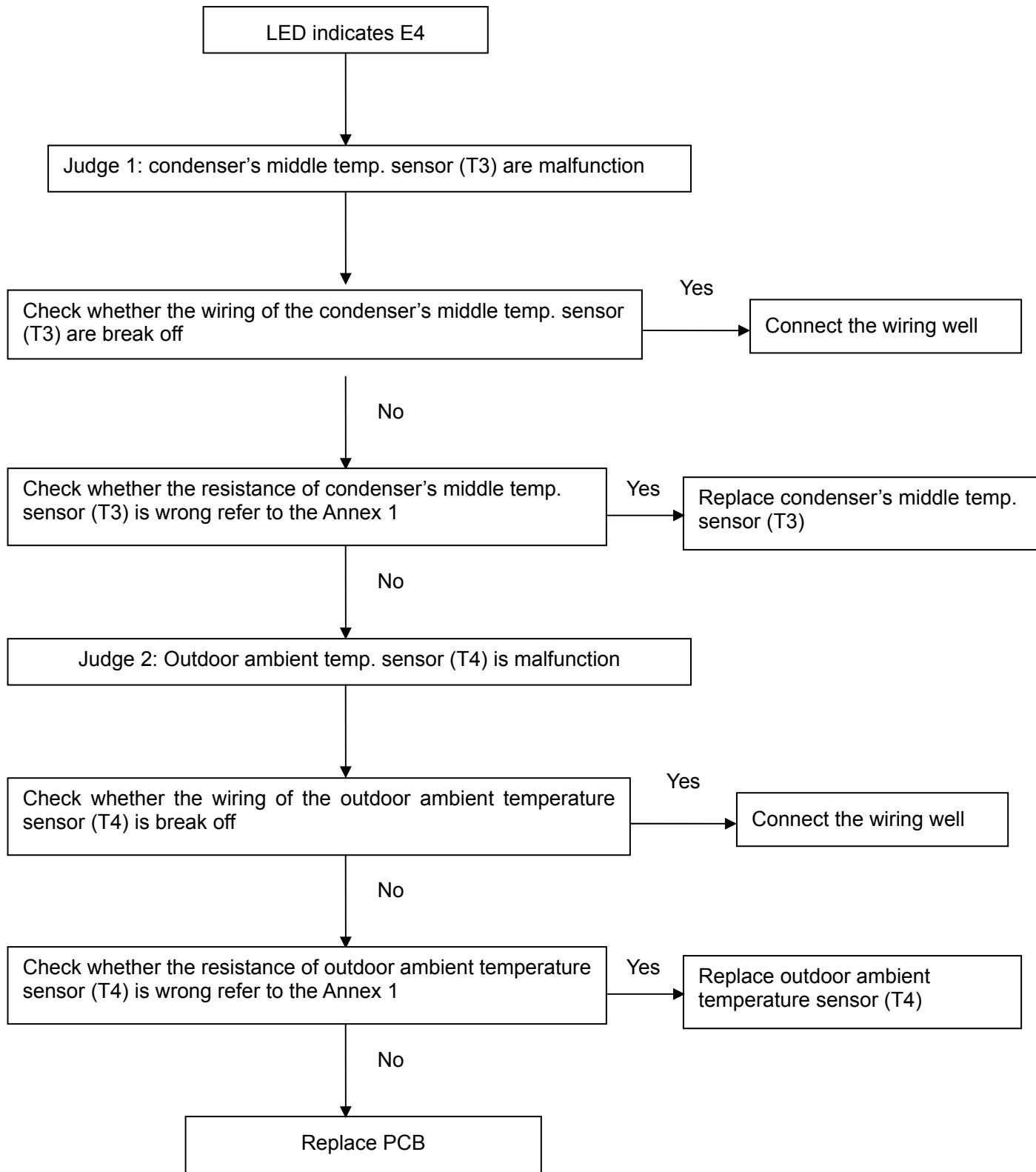
#### 1) E0 malfunction

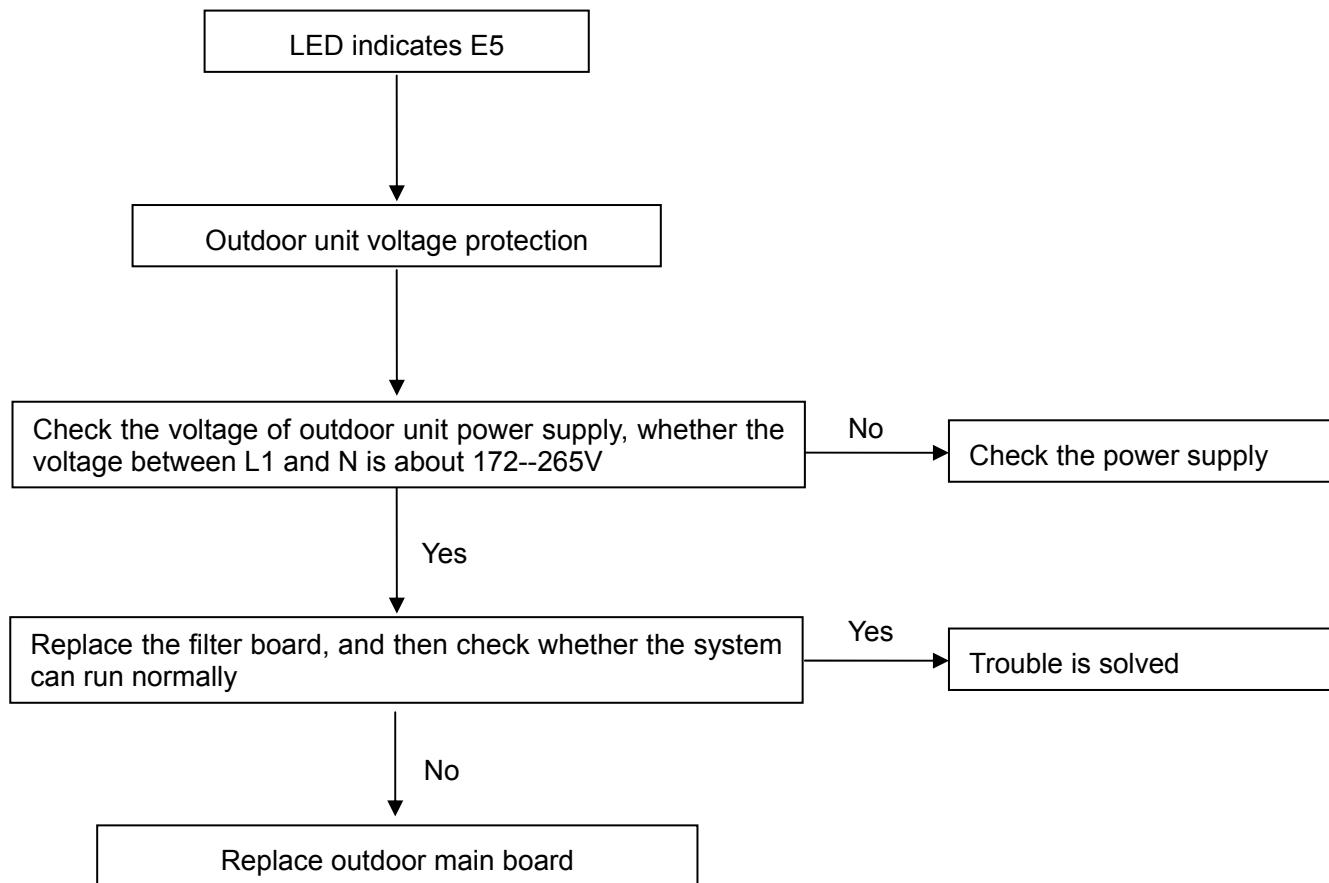


**2) E2 malfunction**

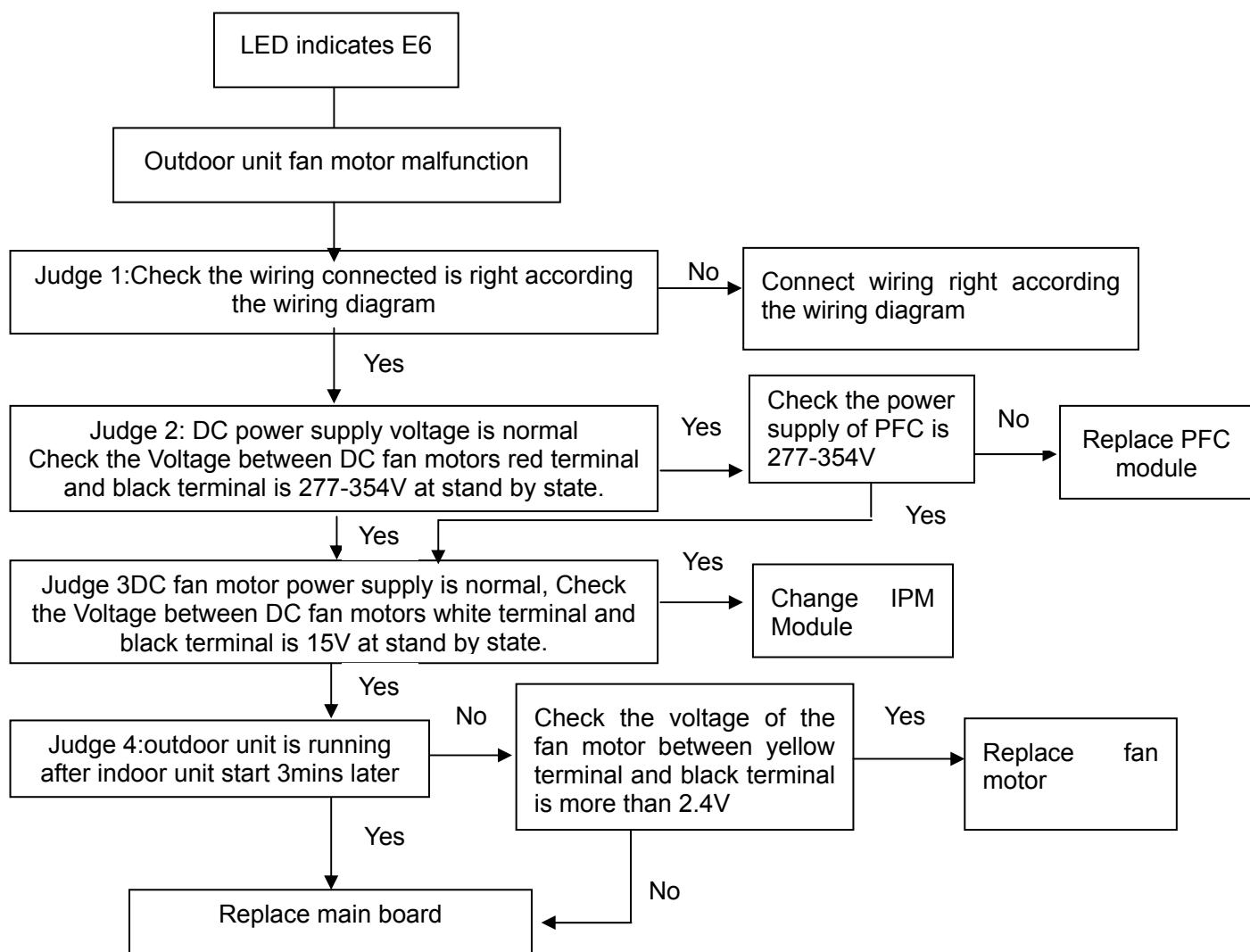
## 3) E3 malfunction



**4) E4 malfunction**

**5) E5 malfunction**

## 6) E6 malfunction

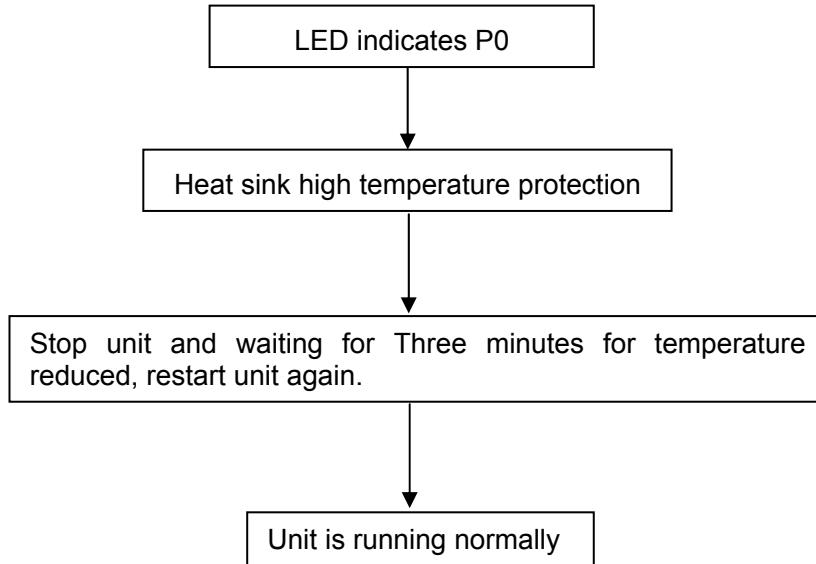


**7) E7 malfunction**

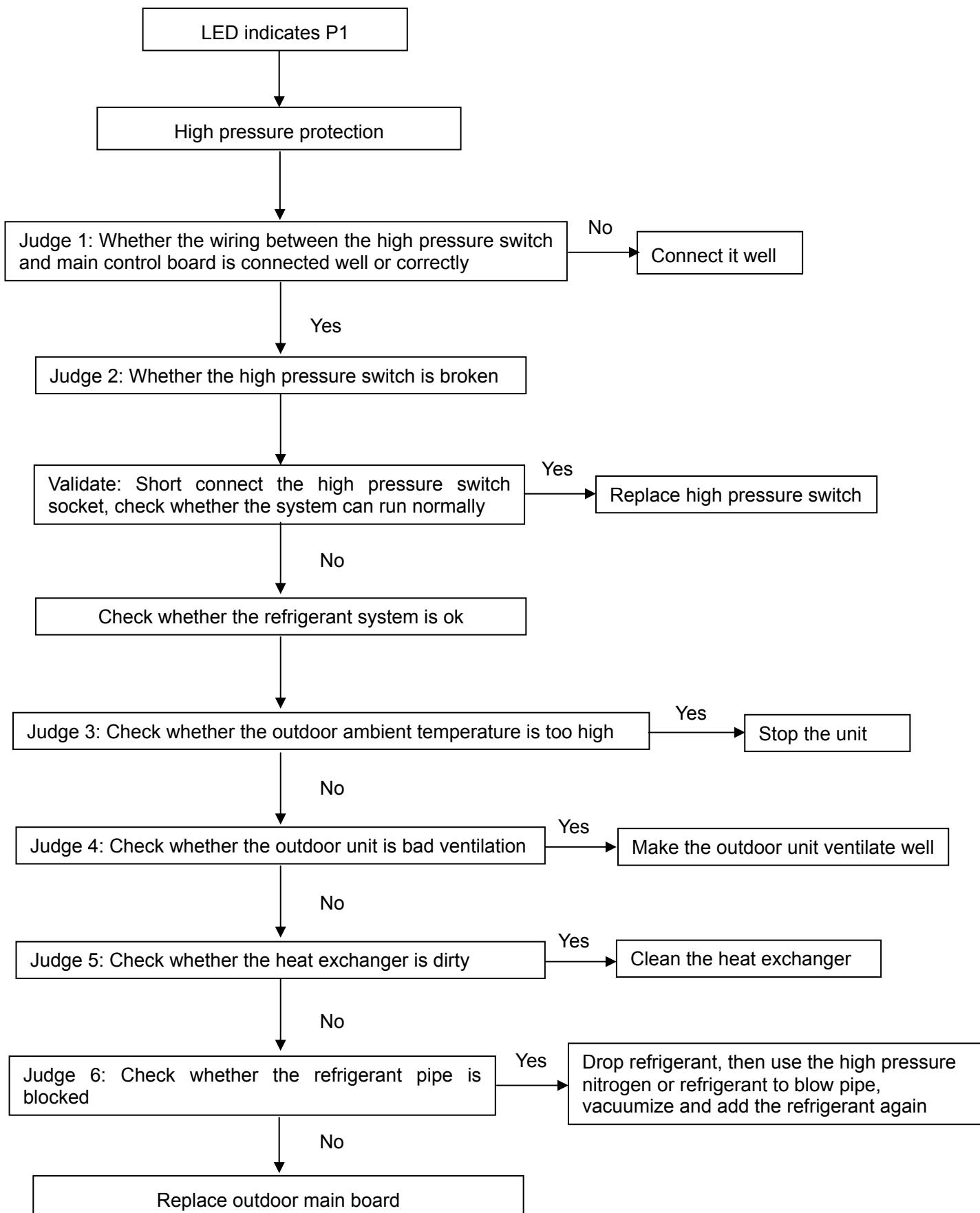
When LED indicates E7, please connect local branch company.

**8) P0 Protection**

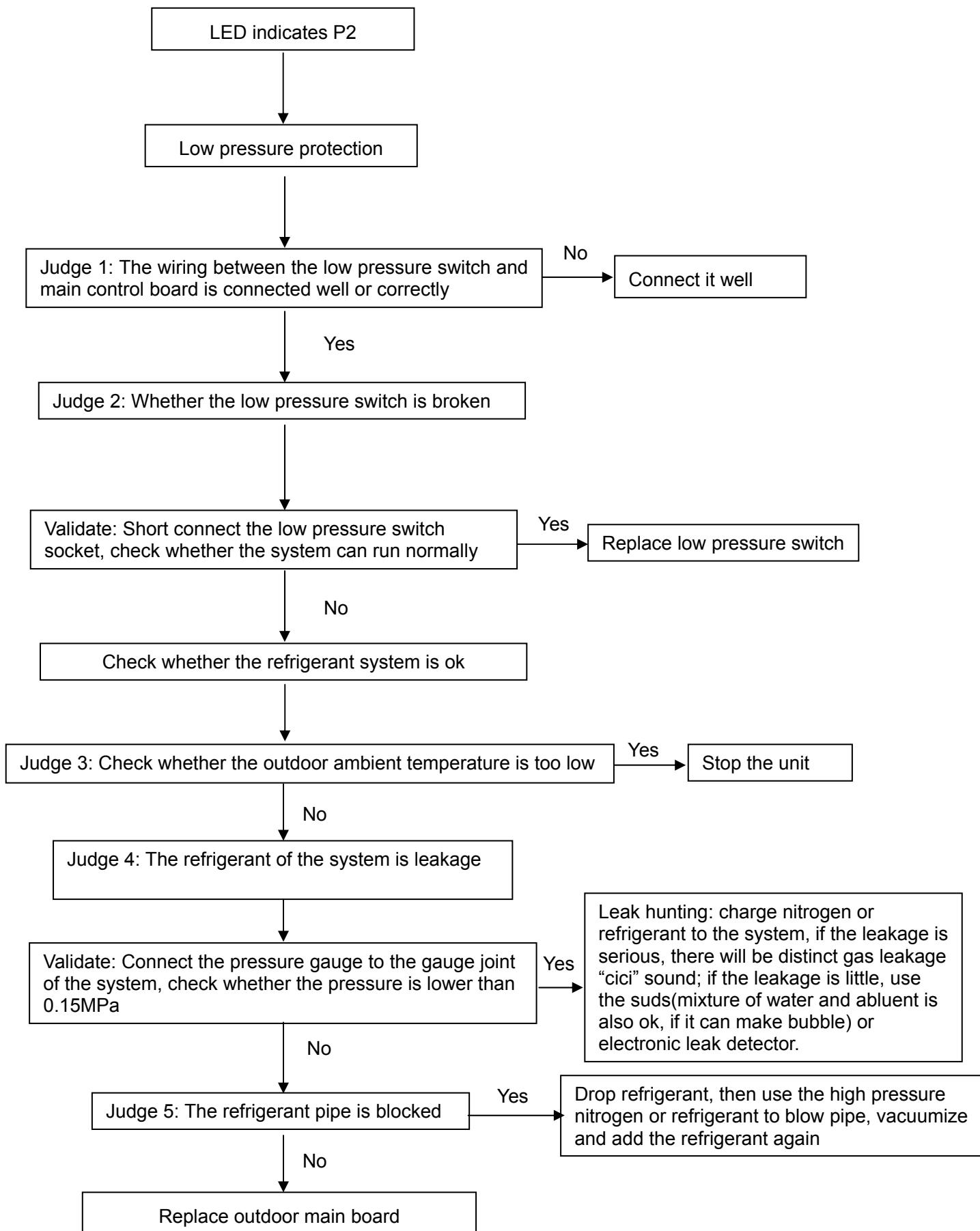
Recovery the compressor stop three minutes later for temperature reduced.



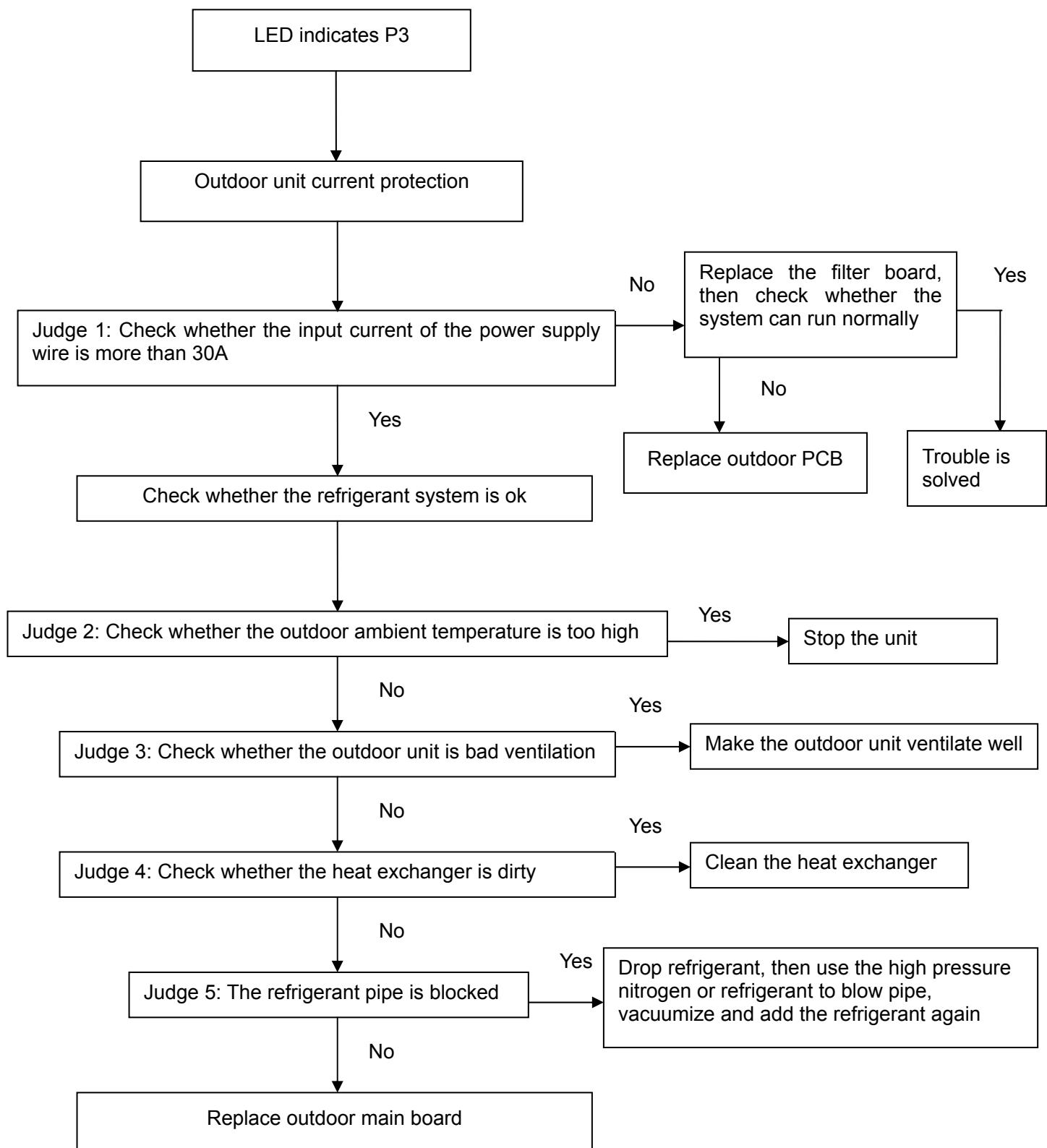
## 9) P1 malfunction



## 10) P2 malfunction

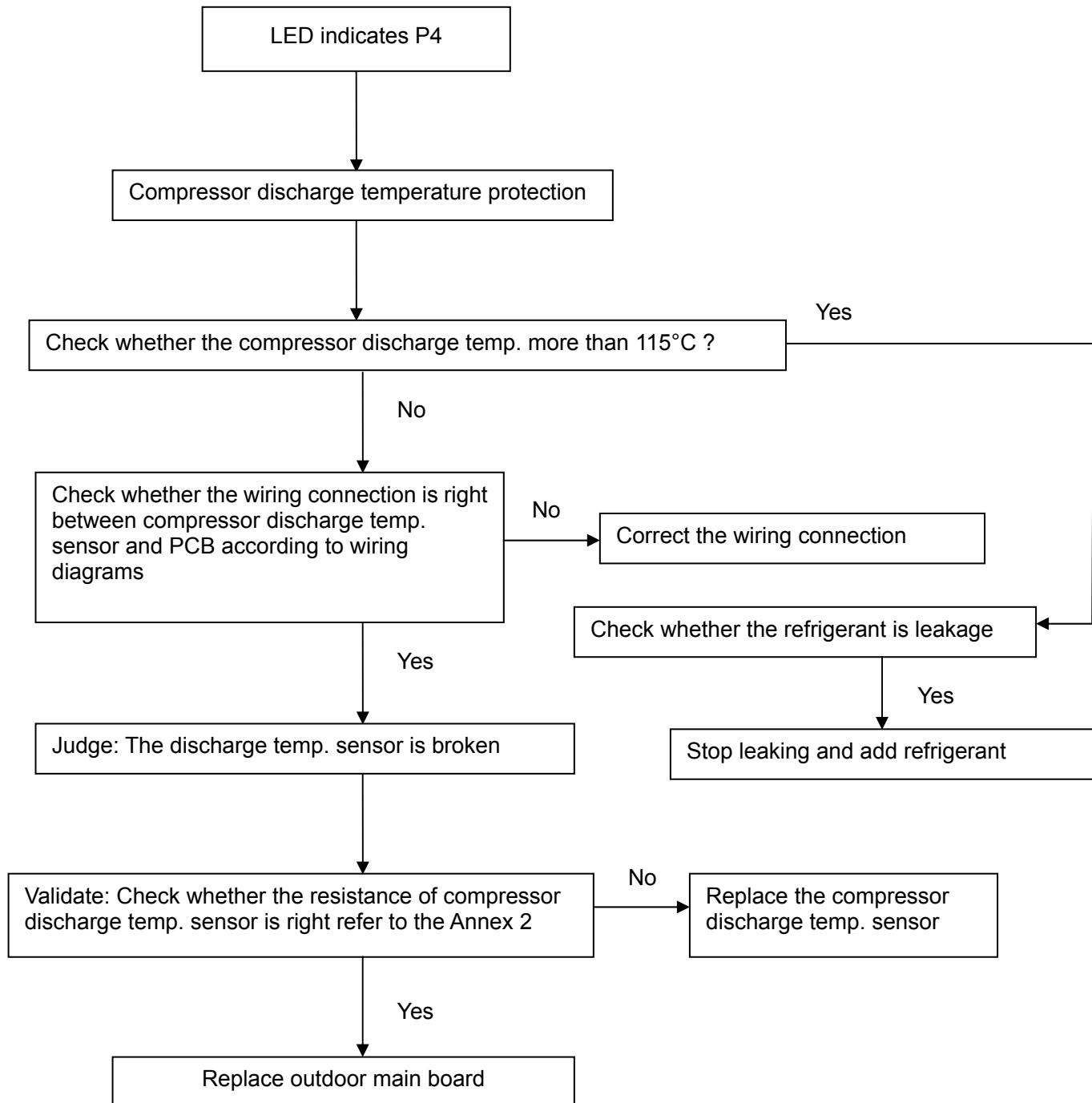


## 11) P3 malfunction



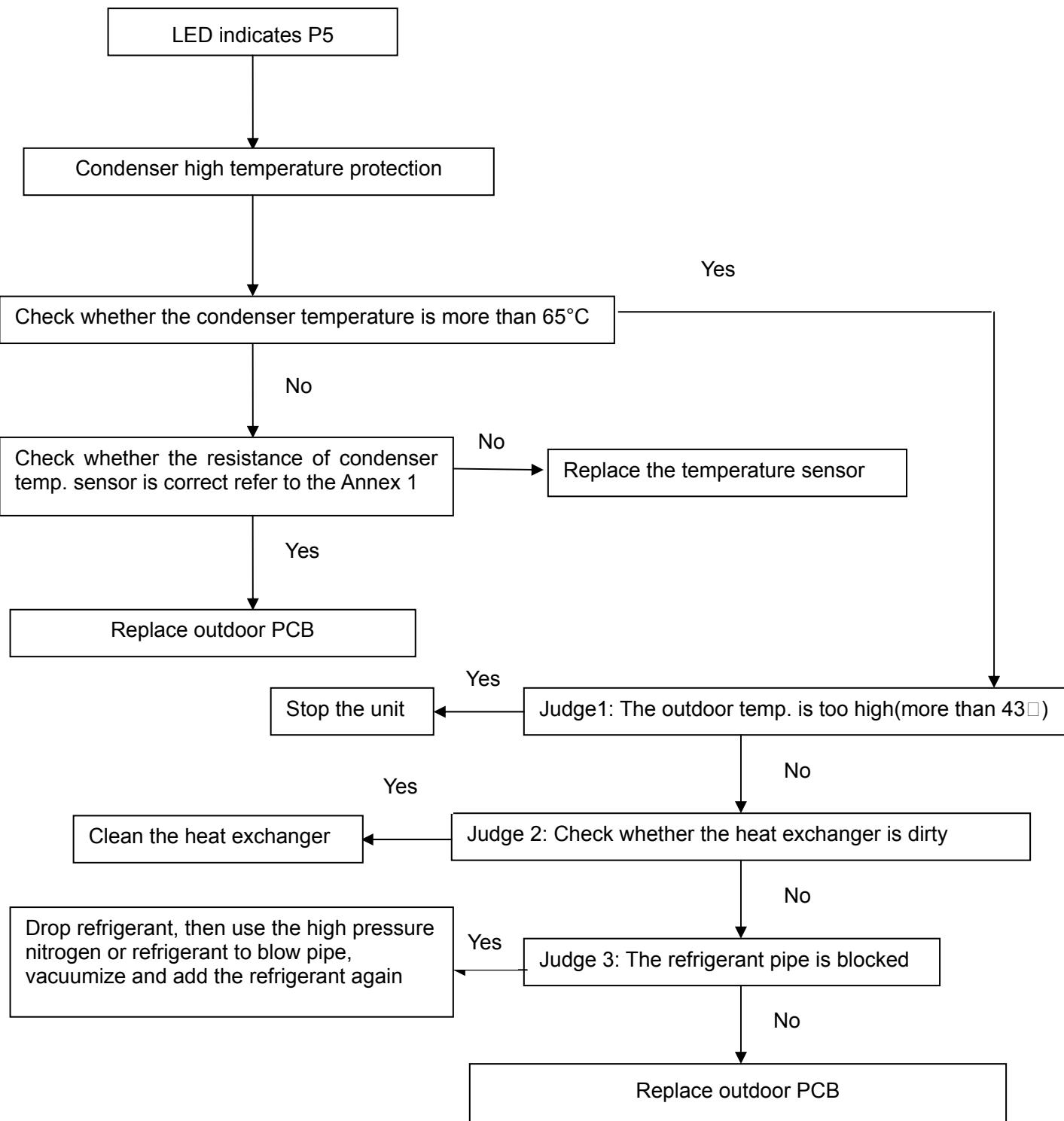
**12) P4 malfunction**

When compressor discharge temperature is more than 115°C, the unit will stop, and unit runs again when compressor discharge temperature is less than 90°C.

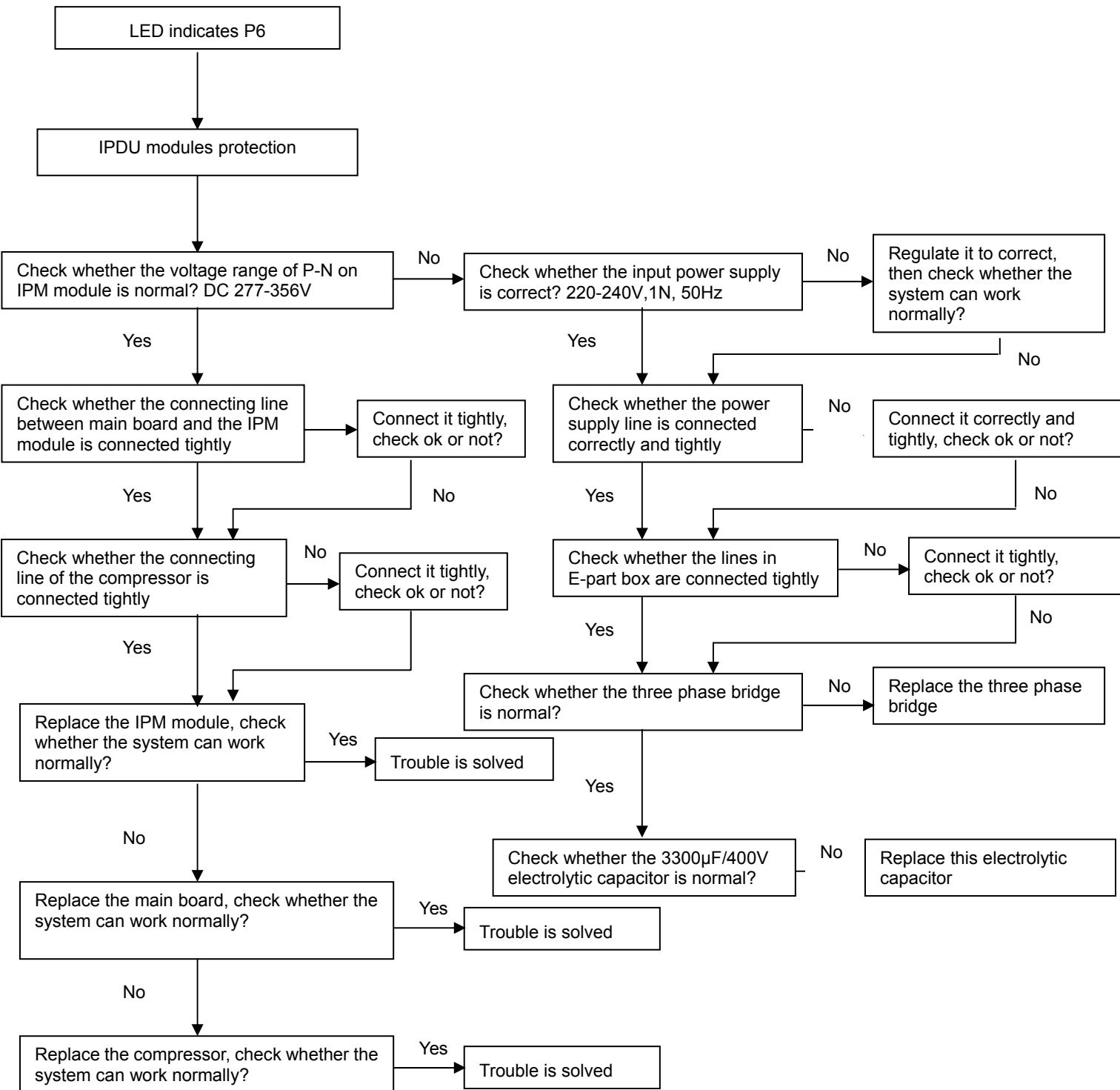


**13) P5 malfunction**

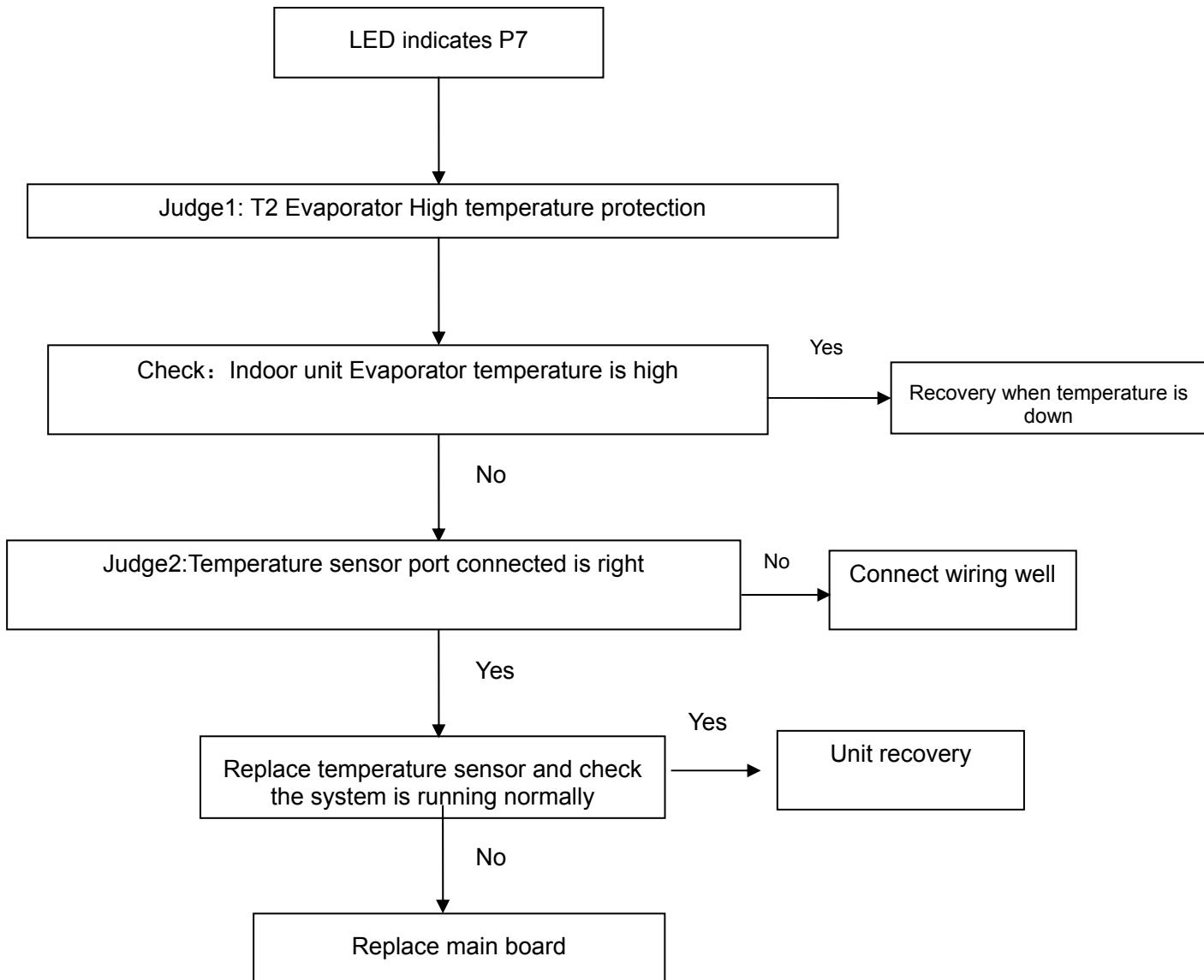
When condenser high temp. is more than 65°C, the unit will stop, and unit runs again when outdoor pipe temp. less than 52°C.



## 14) P6 malfunction



## 15) P7 malfunction

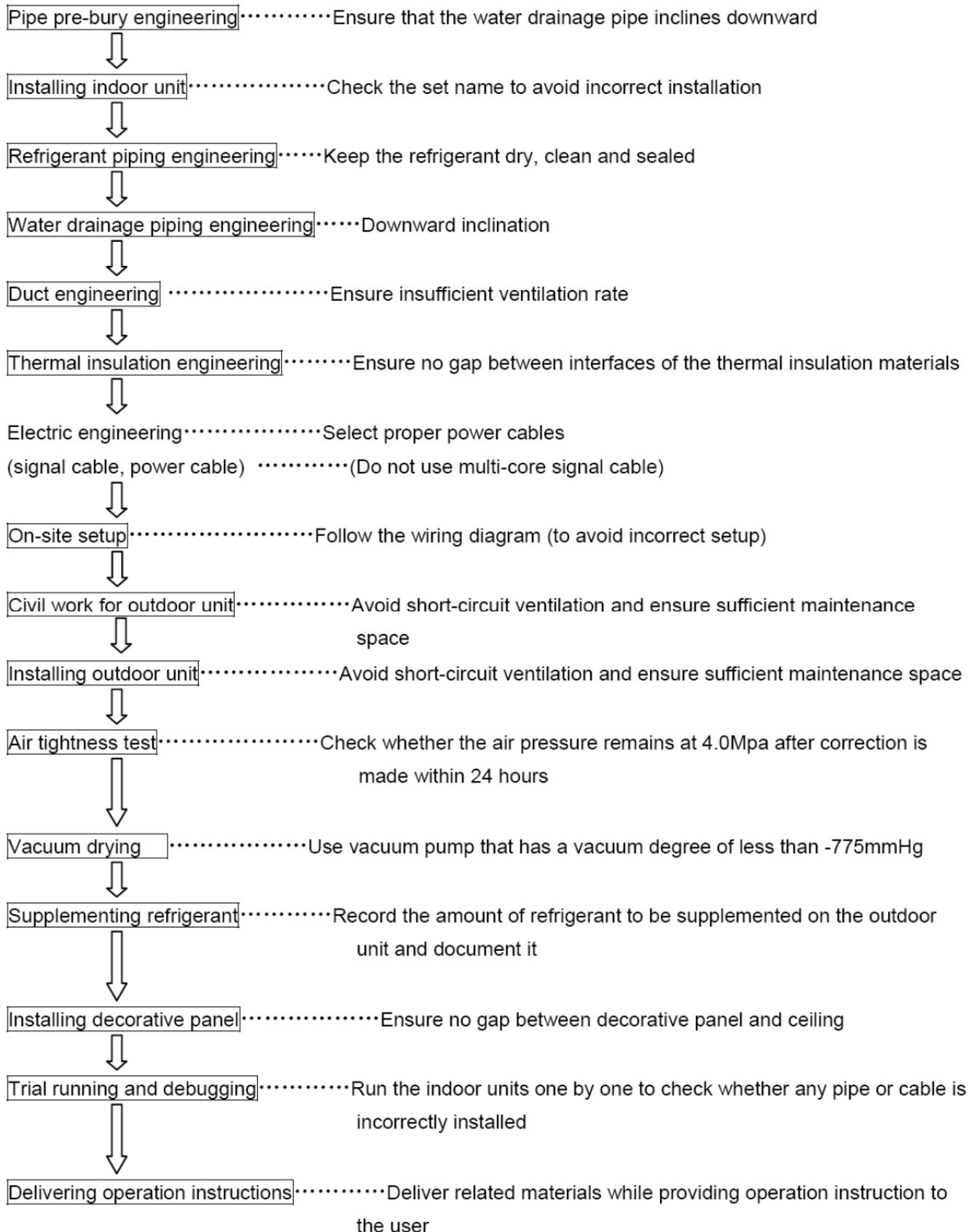


# Part 3 Installation

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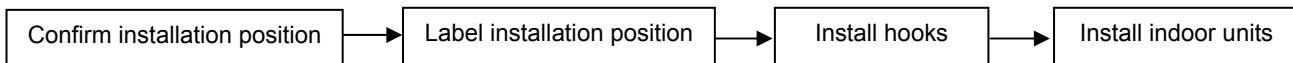
## 1. Summarize of Installation

### 1.1 Installation Procedure



## 1.2 Install indoor units

### Procedure:

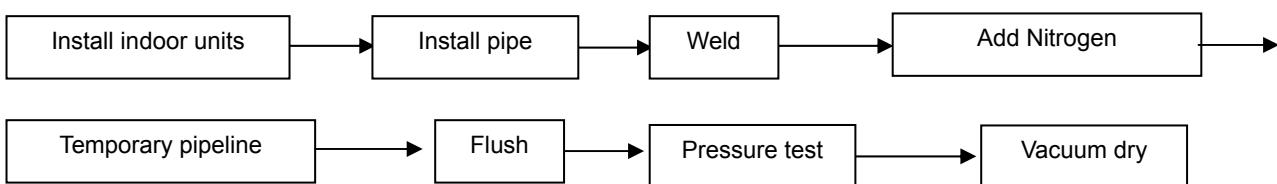


### Note:

- (1) The hook must strong enough to sustain the weight of indoor unit.
- (2) Check the models of indoor units before installation.
- (3) Pay attention to the main devices, such as the pipeline.
- (4) Hold enough places for maintenance.

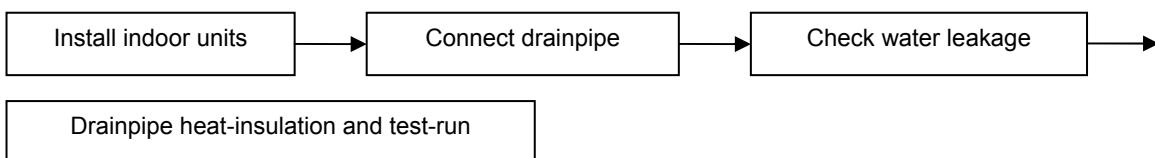
## 1.3 Refrigerant pipe

### Procedure:



## 1.4 Drainage pipe

### Procedure:



**Note:** It is no need to insulate the drainpipe if you choose the plastic pipe as drainpipe.

## 1.5 Electric wiring

- (1) Please select power supply for indoor unit and outdoor unit separately. Both indoor units and outdoor units should be grounded well.
- (2) The power supply should have specified branch circuit with leakage protector and manual switch.
- (3) Please put the connective wiring system between indoor unit and outdoor unit with refrigerant piping system together.
- (4) Power wiring should be done by professional electrician and complied with relevant National Electric Standard.
- (5) The power supply, leakage protector and manual of all the indoor units connecting to the same outdoor unit should be universal. (Please set all the indoor unit power supply of one system into the same circuit.)
- (6) It is suggested to use 3-core shielded wire as signal wire between indoor and outdoor units, multi-core wire is unavailable. Pay attention to the consistency. When signal wire parallel to the power wire, please keep enough distance (about 300mm at least) to prevent interference.
- (7) The power wire and signal wire can't be enlaced together.

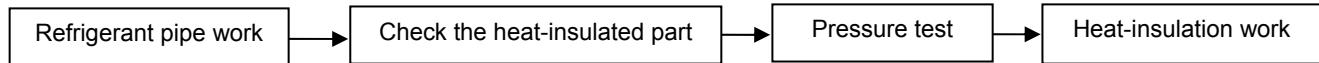
## 1.6 Lay the indoor pipeline

### Note:

Collocate the air-outlet reasonably to prevent airflow short-circuit. Check the static pressure whether in the allowable range. The air filters should be easy to unpick and wash. Do pressure test on pipeline.

## 1.7 Heat-insulation

### Procedure:



**Note:** For welding part, flare part and branch pipe, heat-insulation work must be done after finished the pressure test.

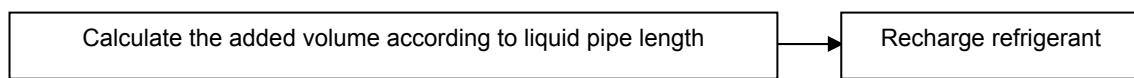
## 1.8 Install outdoor unit

### Note:

- (1) Gutter must be set around the foundation to drain the condensation water.
- (2) When installing outdoor units at the roof, please check the strength of the roof and pay attention not to destroy the waterproof of the roof.

## 1.9 Recharge refrigerant

### Procedure:



**Note:** Please calculate the additional amount of refrigerant according to the formula that we supply to you, and the calculation result must be correct

## 1.10 Main points of test running and debugging

Please check the following issues before turning on the power:

**(1) Vacuum dry:**

Make sure the vacuum degree accord with our requirement about  $10^{-5}$ .

**(2) Wiring:**

Includes the power wiring and communication wiring; Recheck the connection according to our corresponding wire diagrams. Especially, please remember our communication wire is polar; it means you must connect the communication wire correspondingly to the terminal block.

**(3) Additional charge of refrigerant:**

Recheck the calculation formula and recalculate the total recharge volume according to our supplied formula.

**(4) Open the stop-valve of gas and liquid pipe with Allen key; Check leakage of stop-valve with soap water.**

Please confirm whether the outdoor unit has been connected to the power for 12hr before start test running.

**Test running:**

Turn on all of the indoor units with cooling mode and set the temperature in 17degree with high fan speed first, after the system operated, test following operation parameters of the system, including indoor units and outdoor units parameters.

## 2. Outdoor Units Installation

### 2.1 Installation place

Please keep away from the following place, or malfunction of the machine may be caused:

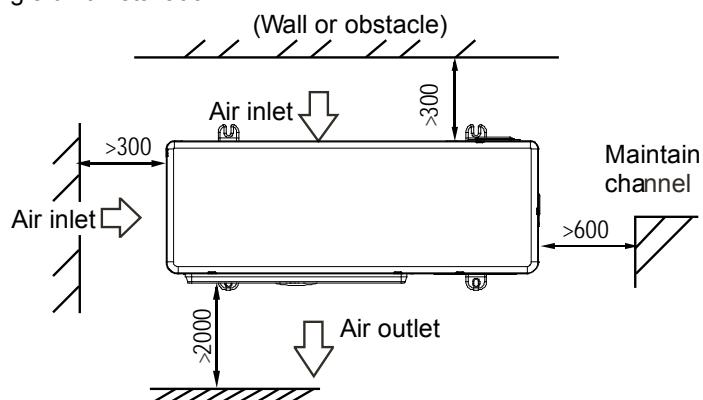
- There is combustible gas leakage.
- There is much oil (including engine oil) ingredient.
- There is salty air surrounding (near the coast)
- There is caustic gas (the sulfide, for example) existing in the air (near a hot spring)
- A place the heat air expelled out from the outdoor unit can reach your neighbor's window.
- A place that the noise interferes your neighbors everyday life
- A place that is too weak to bear the weight of the unit
- Uneven place.
- Insufficient ventilation place.
- Near a private power station or high Frequency equipment.
- Install indoor unit, outdoor unit, power cord and connecting wire at least 1m away from TV set or radio to prevent noise The insulation of the metal parts of the building and the air conditioner should comply with the regulation of National Electric Standard.

#### CAUTION

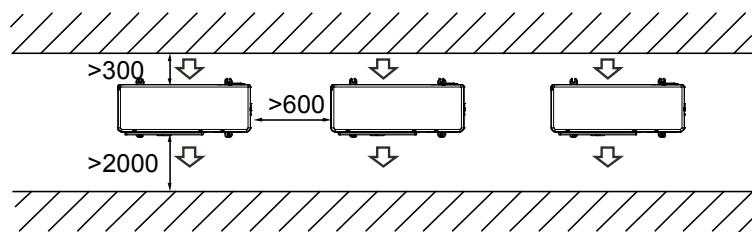
Keep indoor unit, outdoor unit, power supply wiring and transmission wiring at least 1 meter away from televisions and radios. This is to prevent image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if 1 meter is kept.)

### 2.2 Installation space

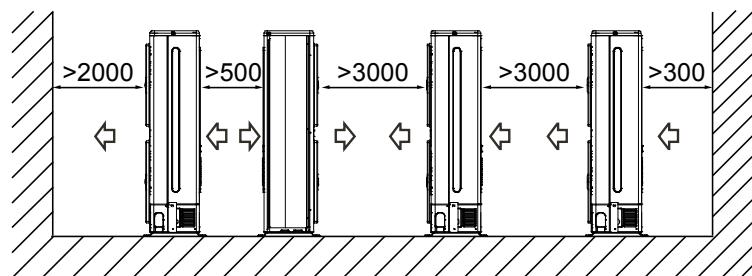
- Single unit installation



- Parallel connect the two units or above

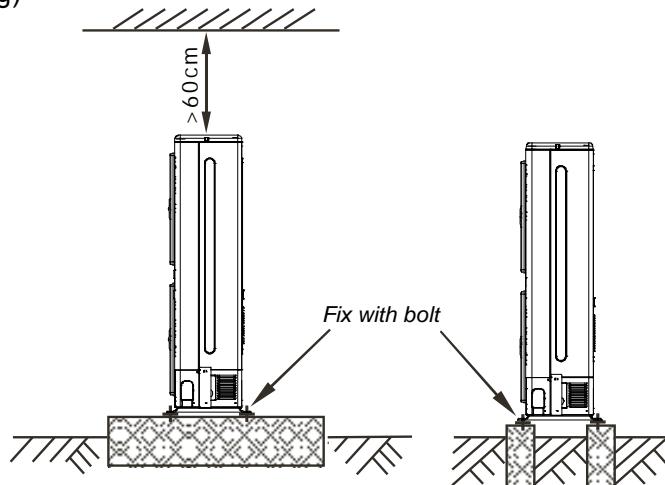


- Parallel connect the front with rear sides



## 2.3 Moving and installation

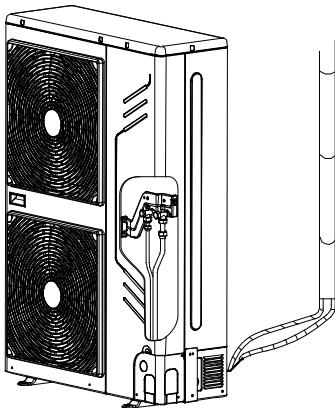
- Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.
- Never hold the inlet of the outdoor unit to prevent it from deforming.
- Do not touch the fan with hands or other objects.
- Do not lean it more than 45°, and do not lay it sidelong.
- Make concrete foundation according to the specifications of the outdoor units.(refer to below Fig)
- Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind. (refer to below Fig)



### NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased (depend on model). The actual shape shall Prevail.

### 3. Installation of Refrigerant Pipe

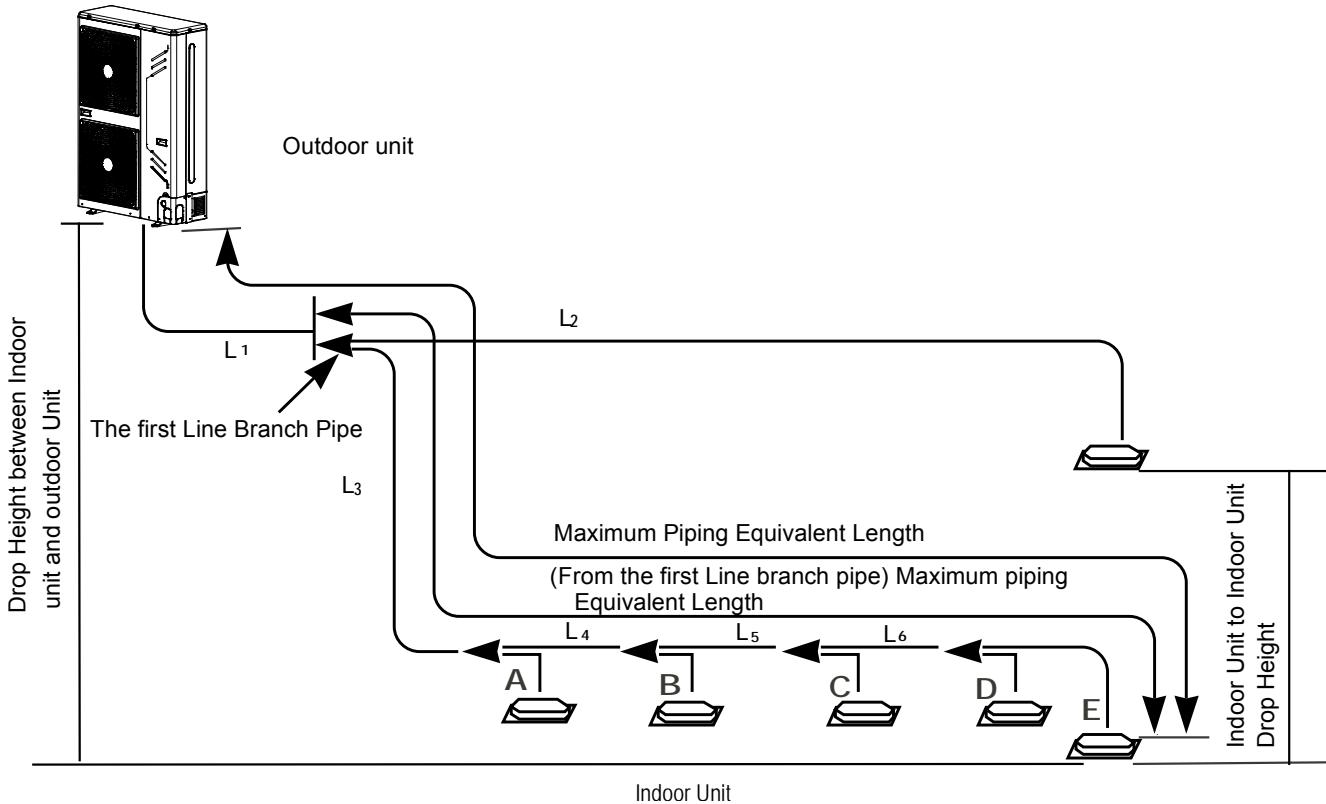


#### CAUTION

To prevent the refrigerant piping from oxidizing inside when welding, it is necessary to charge nitrogen, or oxide will choke the circulation system.

#### 3.1 Using Branch pipe

##### 3.1.1 Length and Drop Height Permitted of the Refrigerant piping



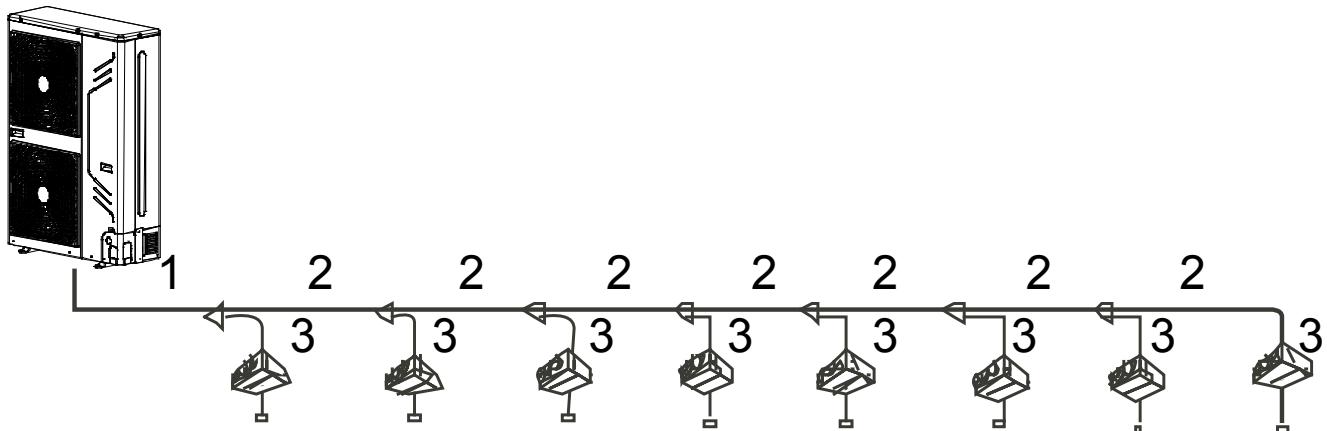
		Permitted value	Piping
Pipe Length	Total Pipe Length (Actual)	≤100m	L1+L2+L3+L4+L5+L6 +A+B+C+D+E
	Maximum Piping(L)	≤45m	L1+L3+L4+L5+L6+ E
	Equivalent Length	≤50m	
Drop Height	Pipe length (from the first line branch to farthest indoor unit)	≤20m	L3+L4+L5+L6+E
	Indoor Unit outdoor unit Drop Height	30m	/
	Outdoor Unit Down	20m	/
Indoor Unit to Indoor Unit Drop Height		8m	/

**Note:** Conversion of the equivalent length: Convert into the direct pipe length according to branch Junction 0.5m/l

### 3.1.2 Pipe size selection

#### 3.1.2.1 Selection of the refrigerant pipe

Type of the pipe	Connecting part	No.
Main pipe	Between outdoor branch joint and first branch joint	1
Indoor main pipe	Between indoor branch joint	2
Indoor pipe	Between branch part and indoor unit	3



#### 3.1.2.2 How to choose the Branch part and the refrigerant pipe?

According the total capacity of outdoor units to select the dimension of main pipe 1:

Refrigerant	Capacity of outdoor unit (kW)	Gas side	Liquid side
R410A	12	Φ15.9	Φ9.52
	14	Φ15.9	Φ9.52
	16	Φ15.9	Φ9.52
Remarks	A converter pipe is needed for the connection between first branch joint and outdoor unit.		

Notes: Branch header must be connected with indoor units directly, the further branch connection is not allowed.

#### 3.1.2.3 The maximum connection of indoor units:

Capacity of outdoor unit (kW)	Capacity of Outdoor unit (horsepower)	Maximum Quantity of Indoor unit	Sum capacity of indoor unit (kW)
12	4	8	45%~130%
14	5	8	45%~130%
16	6	8	45%~130%

#### 3.1.2.4 According the capacity of indoor units to select indoor main pipe 2 , main pipe 3 and branch joint:

A: the total capacity and the gas side/liquid side pipe of indoor units

Down side indoor unit capacity A (x 100W)	Liquid side mm	Gas side mm	Name of indoor unit branch pipe
A<166	Φ9.5	Φ19.1	FQZHN-01
166≤A<230	Φ9.5	Φ22.2	FQZHN-02

#### 3.1.2.5 Modification main pipe 1:

According to the 3.1.2.2 and step 3.1.2.4 of calculation result, If the main pipe dimension according to outdoor capacity selection result are different from indoor capacity selection result, so the main pipe dimension you should selection bigger pipe.

### 3.1.2.6 Connecting method

4, 5, 6 HP Outdoor unit	Gas side	Liquid side
	Flaring nut	Flaring nut

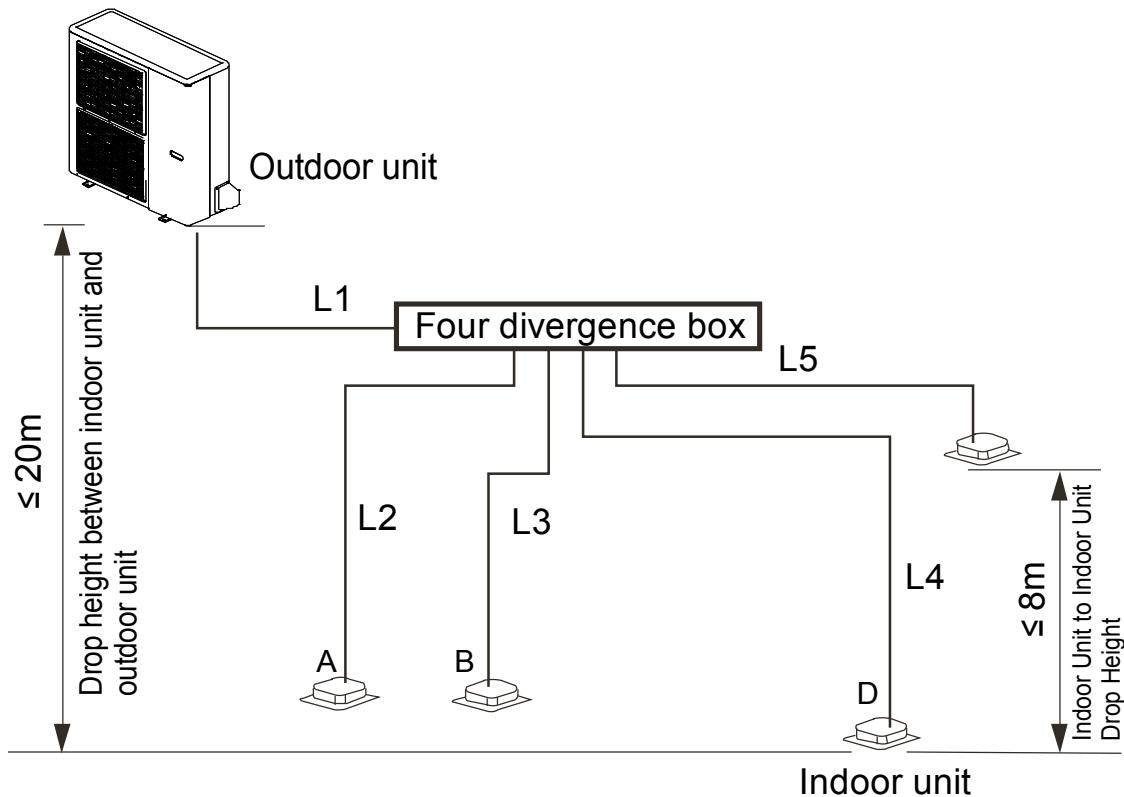
### 3.1.2.7 The dimension of branch part

#### Branch list

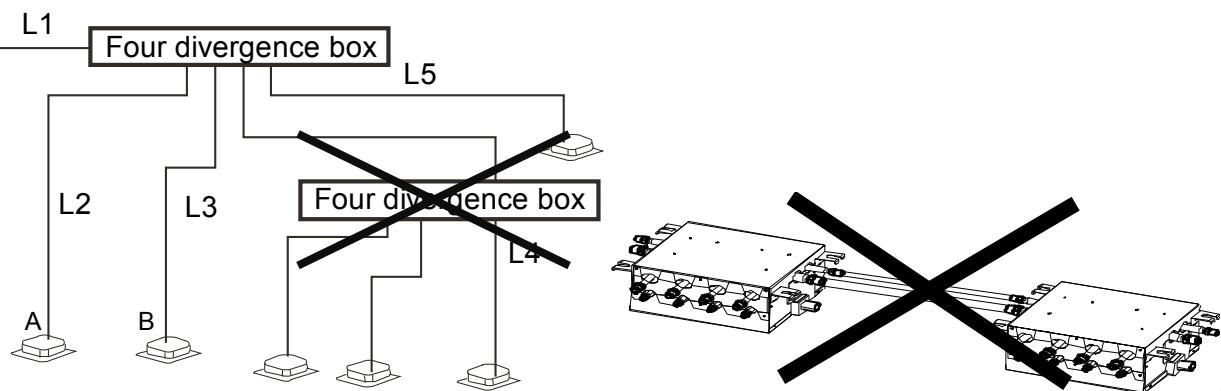
Name	Gas side joints	Liquid side joints	Converter pipe (gas pipe used)
FQZHN-01			
FQZHN-02			

## 3.2 Using four divergence box

### 3.2.1 Length and Drop Height Permitted of the Refrigerant piping



**Note:** The divergence box should be placed between the indoor and outdoor units. Forbid to connect another divergence boxes to a indoor unit.



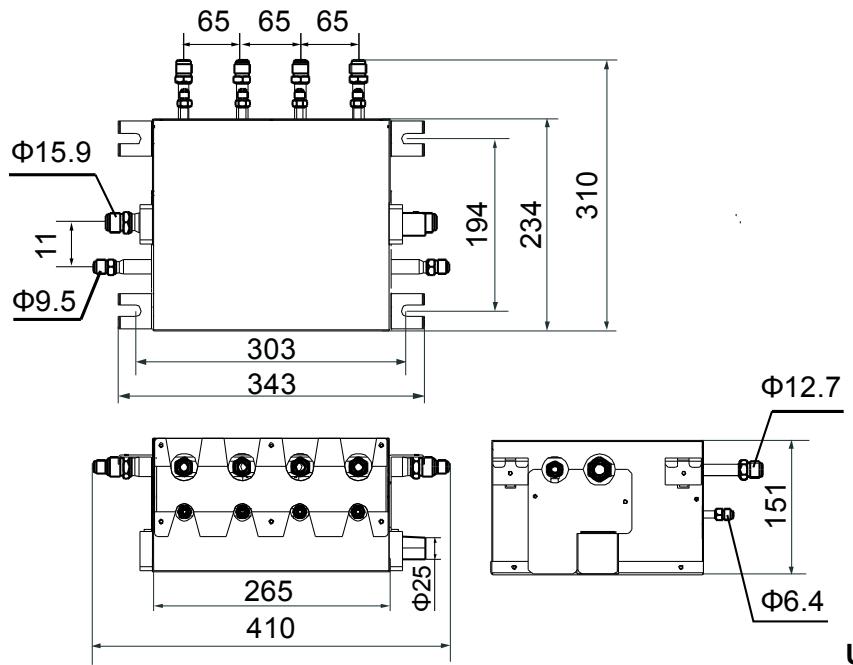
		Permitted value	Piping
Pipe Length	Total Pipe Length (Actual)	$\leq 100\text{m}$	$L1+L2+L3+L4+L5$
	Maximum Piping(L)	$\leq 45\text{m}$	$L1+L2, L1+L3,$
		$\leq 50\text{m}$	$L1+L4, L1+L5$
Drop Height	Pipe length (from divergence box to indoor unit pipe)	$\leq 20\text{m}$	$L2, L3, L4, L5$
	Indoor Unit outdoor unit Drop Height	$\leq 20\text{m}$	/
	Outdoor Unit Up	$\leq 20\text{m}$	/
Indoor Unit to Indoor Unit Drop Height	Outdoor Unit Down	$\leq 20\text{m}$	/
	Indoor Unit to Indoor Unit Drop Height	$\leq 8\text{m}$	/

Four divergence box	Outdoor side		Indoor side	
	Liquid side	Gas side	Liquid side	Gas side
	mm	mm	mm	mm
	$\Phi 9.5$	$\Phi 15.9$	$\Phi 6.4$	$\Phi 12.7$

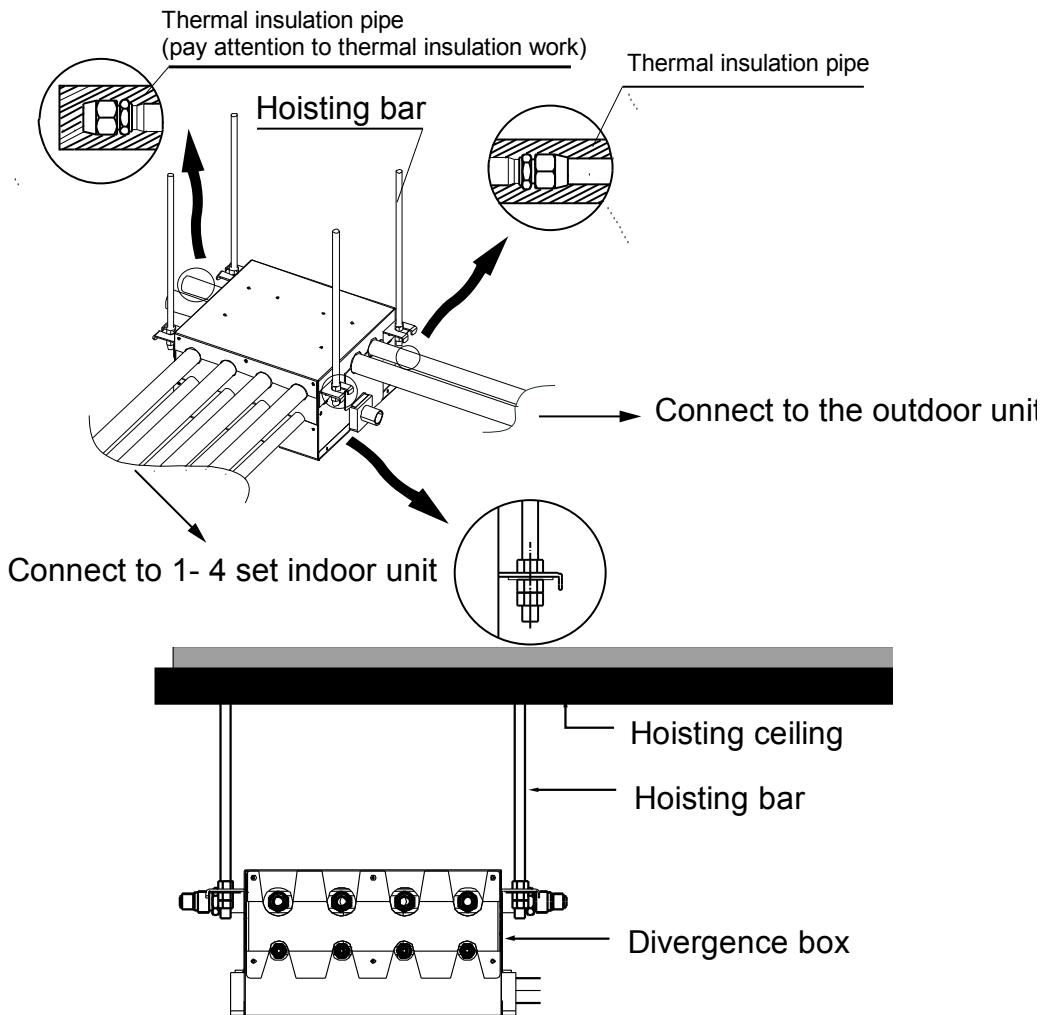
Note: Model limitation: Each Indoor unit capacity  $\leq 7100\text{W}$ .

### 3.2.2 Four divergence box dimension

Dimension



## Installation instruction



### 3.3 Refrigerant Amount to be added

Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit connection.

**Table 6-8**

Liquid Side Piping Diameter	Refrigerant to be added Per meter Piping
Ø6.4	0.023kg
Ø9.5	0.060kg
Ø12.7	0.120kg
Ø15.9	0.180kg
Ø19.1	0.270kg
Ø22.2	0.380kg

**NOTE:**

Additional refrigerant volume of branch pipe is 0.1kg per item (Consider the liquid side of branch pipe only)

## 4. Processing & Installation of Drainage Pipe

### 4.1 Gradients and Supporting

4.1.1 Keep the drainpipe sloping downwards at a gradient of at least 1/100. Keep the drainpipe as short as possible and eliminate the air bubble.

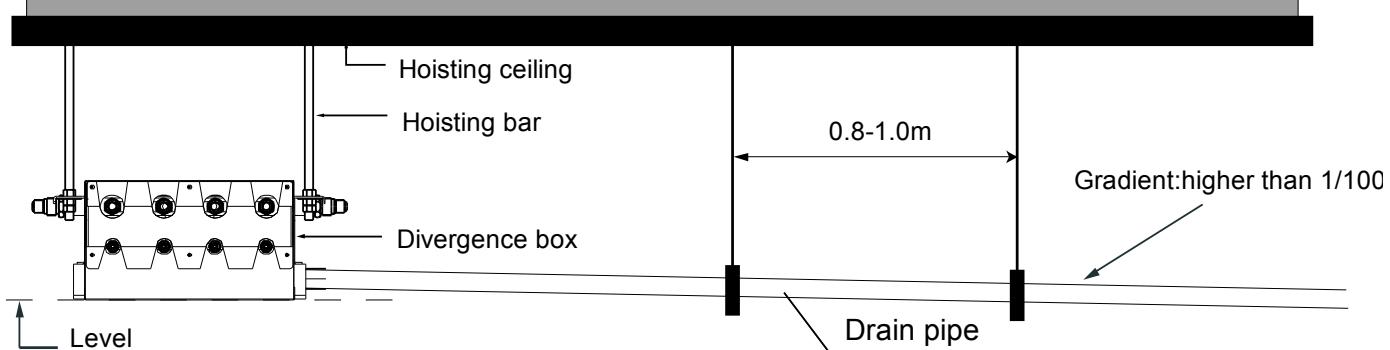
4.1.2 The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/100 and prevent bending. Refer to the following table for the specification of the prop stand.

	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1.5~2m

#### Precautions

- The diameter of drainpipe should meet the drainage requirement at least.
- The drainpipe should be heat-insulated to prevent atomization.
- Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can act correctly.
- All connection should be firm.
- Wipe color on PVC pipe to note connection.
- Climbing, horizontal and bending conditions are prohibited.
- The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.
- Heat-insulation should be done well to prevent condensation.
- Indoor units with different drainage type can't share one convergent drainpipe.

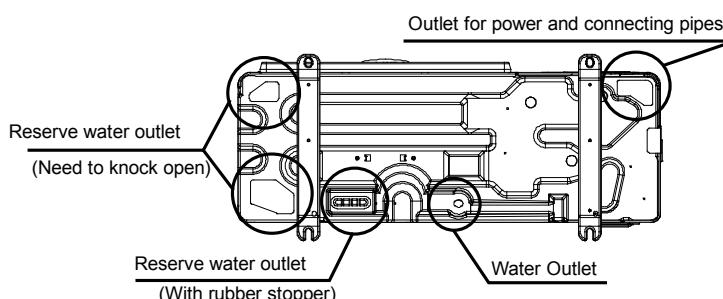
#### Drainpipe Installation for four divergence box.



- a. Drainpipe from main body must be wrapped by insulation tube evenly, and bound by tighten band for obstructing air getting in and coagulation.
- b. Prevent from water backflow into unit inside during shutdown, the drain pipe shall place down side and drain water to outdoor (drain side), the gradient of the drain pipe should be higher than (1/100), without salient and water remain.
- c. When connecting drainpipe, don't drag the pipe that would pull the main unit. For this, please arrange bearing points every 0.8 to 1.0 meter to avoid pipe be bended.

### 4.2 Drainpipe Trap

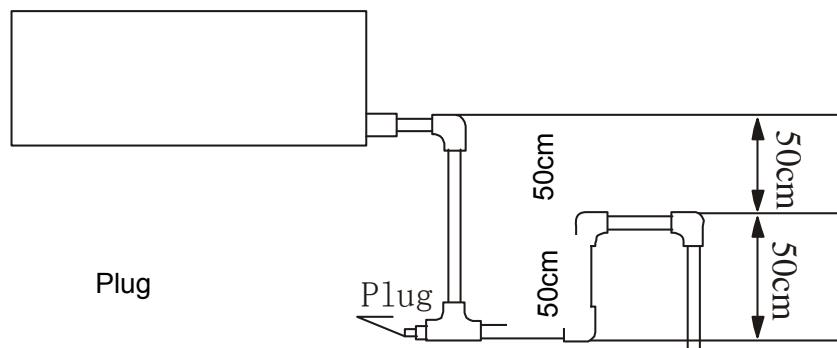
For condenser water outlets on the chassis for selection display as the follow figure.



**4.2.1** If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.

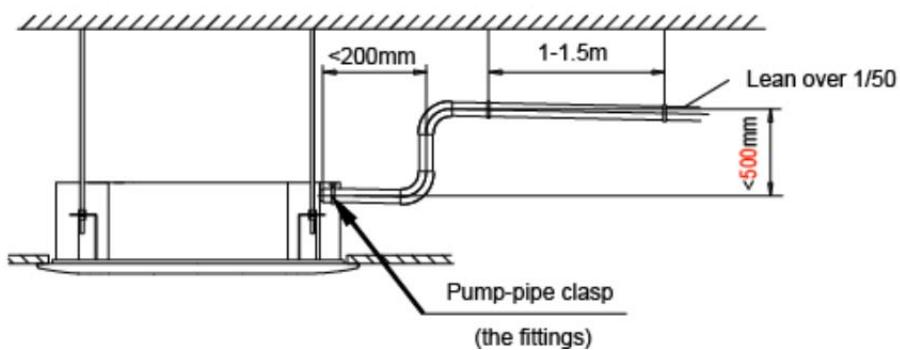
**4.2.2** Every indoor unit needs one drainpipe trap.

**4.2.3** A plug should be designed to do cleaning.

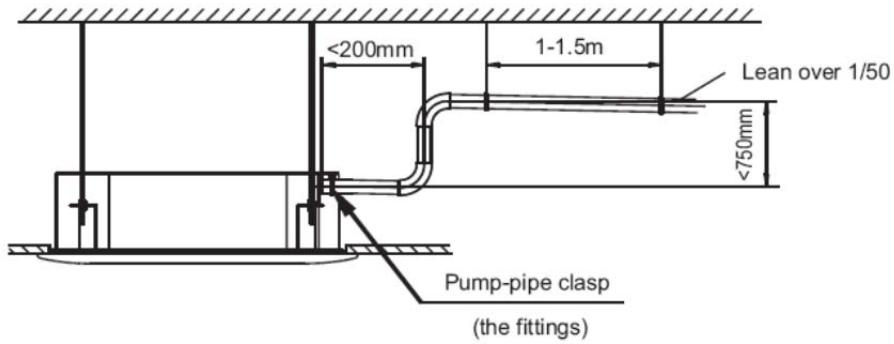


### 4.3 Upward drainage (drain pump)

#### 4.3.1 For Four-way cassette (compact)



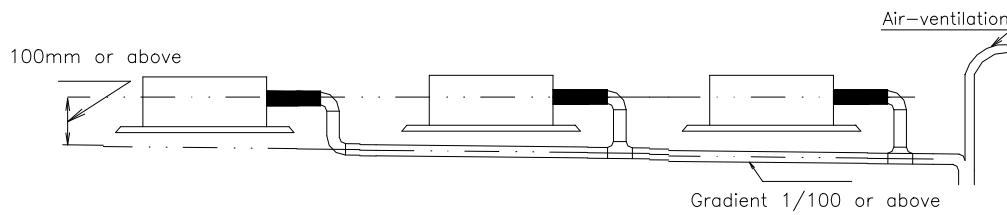
#### 4.3.1 For Four-way cassette



### 4.4 Convergent drainage

**4.4.1** The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.

**4.4.2** Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.



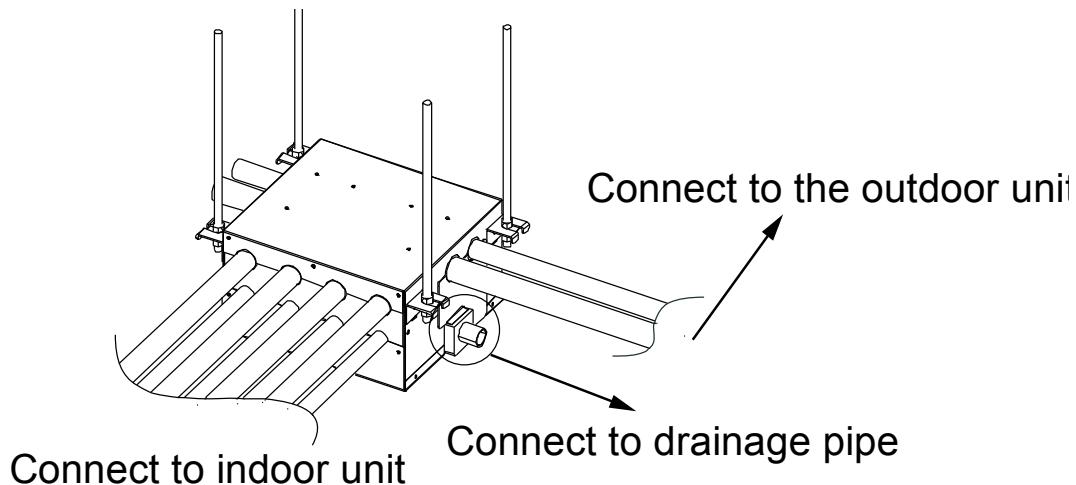
Selection the diameter

Number of connecting indoor units → Calculate drainage volume → Select the diameter

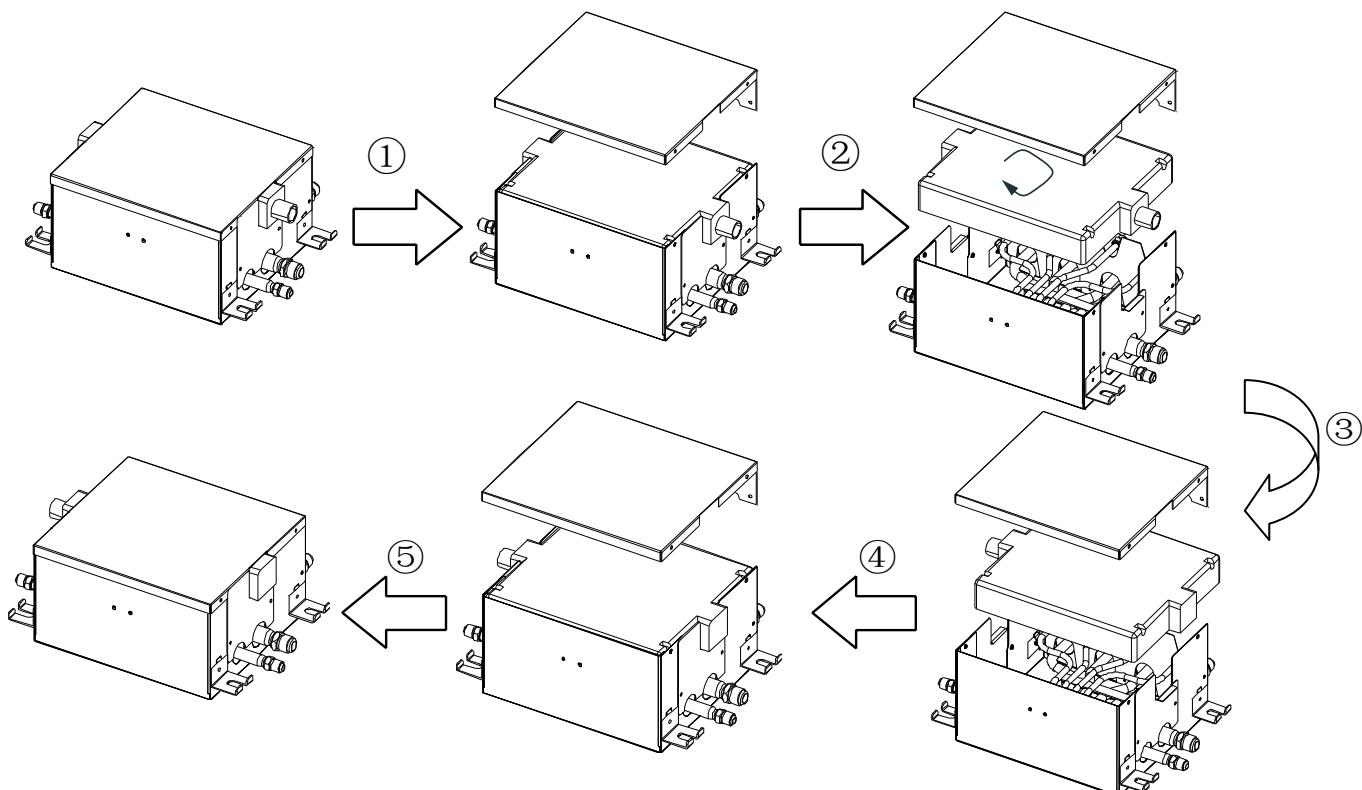
Calculate allowed volume = Total cooling capacity of indoor units (HP)  $\times 2$  (l/ hr)

	Allowed volume(lean 1/100) (l/ hr)	I.D. (mm)	Thick
Hard PVC	$\infty \leq 14$	$\varnothing 25$	3.0
Hard PVC	$14 < \infty \leq 88$	$\varnothing 30$	3.5
Hard PVC	$88 < \infty \leq 334$	$\varnothing 40$	4.0
Hard PVC	$175 < \infty \leq 334$	$\varnothing 50$	4.5
Hard PVC	$334 < \infty$	$\varnothing 80$	6.0

#### 4.5 Connect Drainage pipe from four divergence box



If it necessary to connect drainage pipe to another side, it need to convert water tank.



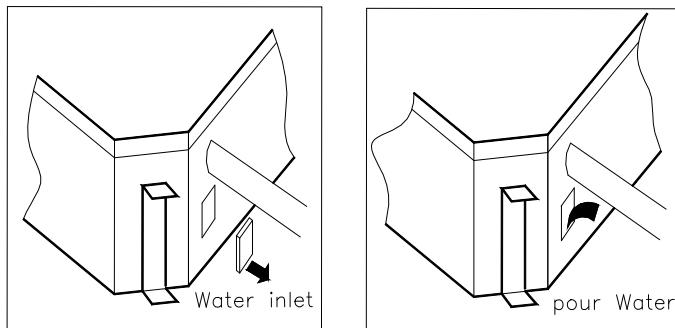
#### 4.5 Drainage test

##### 4.5.1 Drainage without drain pump

After finishing drainpipe installation, pour some water into the water plate to check if the water flows smoothly.

#### 4.5.2 Drainage with drain pump

4.5.2.1 Poke the Water Level Switch, remove the cover, and use water pipe to pour 2000ml water into the water plate through the water inlet.



4.5.2.2 Turn on the power to cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.

4.5.2.3 Stop the air conditioner running, turn off the power, and put back the cover.

- Stop the air conditioner. After 3 minutes, check if it has abnormality. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even circumfluence from the water plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop (means this indoor unit stops, stand-by, but the outdoor unit still work if there is capacity requirement). Turn off the power and drain the remained water, then turn on the air conditioner.

**Note:**

the drain stopper in the main water plate is for maintenance. Stuff up the drain stopper to prevent water leakage.

## 5. Insulation Work

### 5.1 Insulation material and thickness

#### 5.1.1 Insulation material

Insulation material should adopt the material, which is able to endure the pipe's temperature: no less than 70°C in the high-pressure side, no less than 120°C in the low-pressure side (For the cooling type machine, no requirements at the low-pressure side.)

Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120°C)

Cooling only type---- Polyethylene foam (withstand above 100°C)

Thickness choice for insulation material

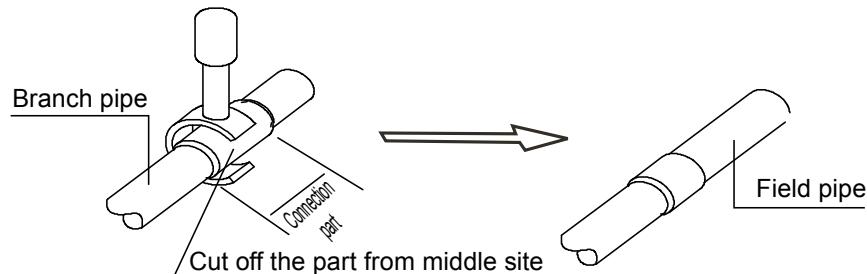
Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Ø6.4—Ø25.4	10mm
	Ø28.6—Ø38.0	15mm
	Ø38.0—Ø67.0	20mm
Drainage pipe	Inner diameter Ø20—Ø32	6mm

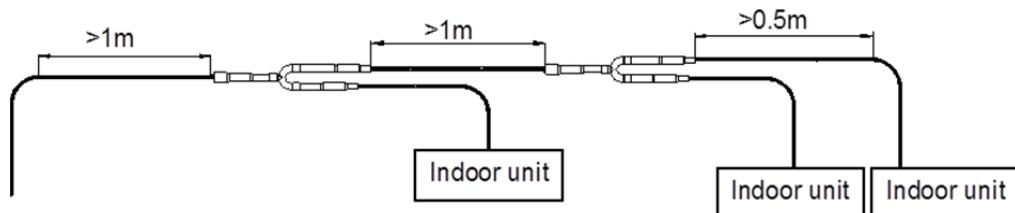
### 5.2 Refrigerant pipe insulation

#### 5.2.1 Work Procedure

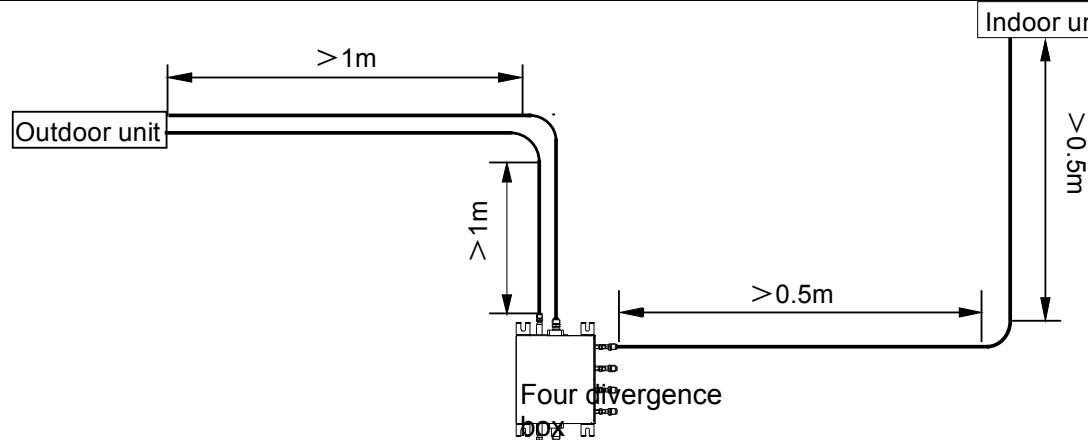
- Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.
- After the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated
- Select the branch pipes' model according to the Model Selection Guide and the downstream indoor unit capacity. According to the actual piping size and cut off the needless parts with special tools such as cutter.



- Pay attention to the distance of straight horizontal pipe

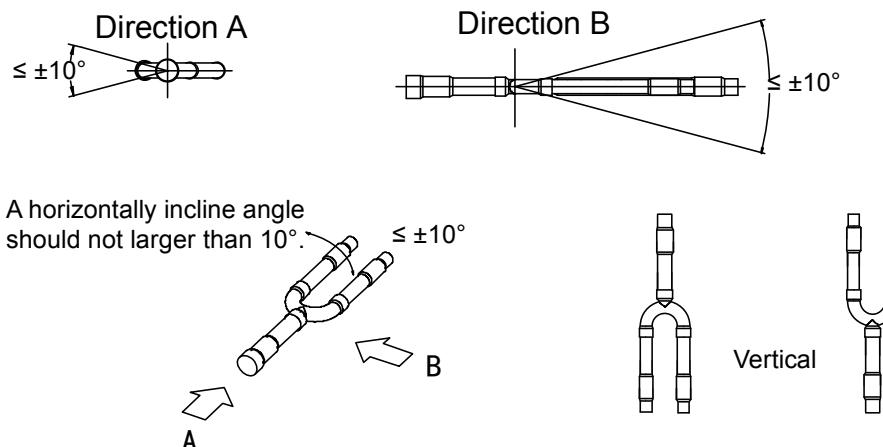


- a. The straight horizontal pipe's distance between two adjacent branch pipes should  $\geq 1m$ .
- b. Distance between two adjacent branches should  $\geq 1m$ .
- c. The straight horizontal pipe's distance which indoor unit connecting behind the branch pipe should  $\geq 0.5m$ .
- The MIN. length of straight pipe connected to four divergence box



- a. The distance between outdoor unit and the nearest of straight pipe need to be  $>1\text{m}$ .
- b. The distance between the divergence input terminal and the nearest turning site of straight pipe need to be  $>1\text{m}$ .
- c. The distance between the divergence output terminal and the nearest turning site of straight pipe need to be  $>0.5\text{m}$ .
- d. The distance between indoor unit and the nearest turning site of straight pipe need to be  $>0.5\text{m}$ .

- Pay attention to lay horizontally and vertically.



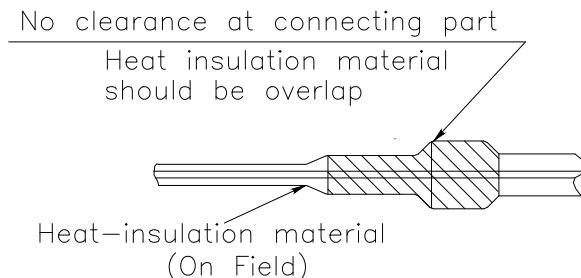
#### Insulation for non-jointing parts and non-connection parts

Wrong	Right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (Cooling only)	Insulate the gas pipe and the liquid pipe

For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two tips of the pipe, Remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

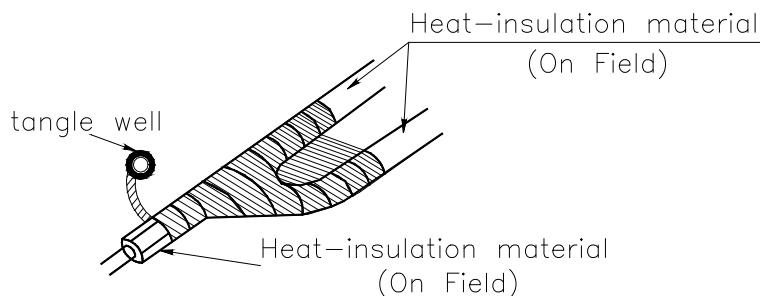
Insulate for the jointing area, expanding area and the flange area

- Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes
- Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



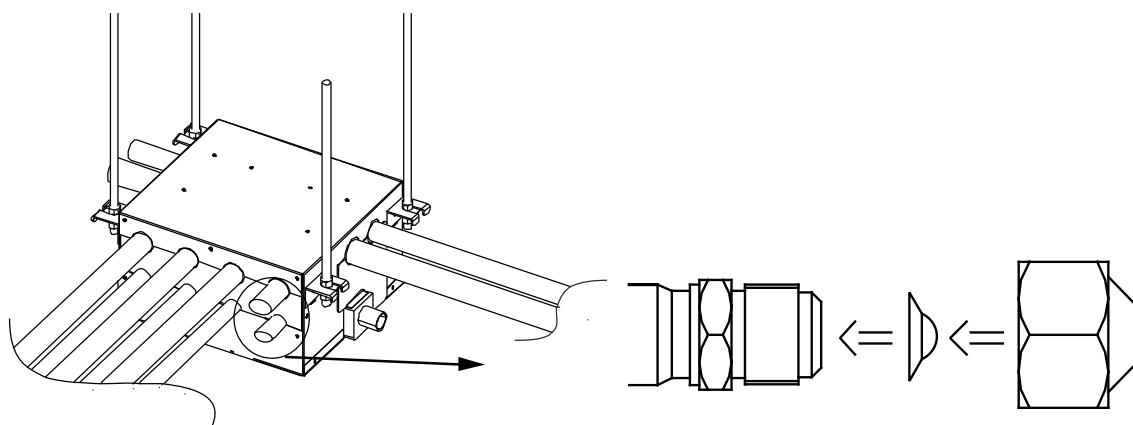
#### Enswathe disposal

After insulation of the pipes, do the enswathe disposal with binding belt, make sure it's tight.



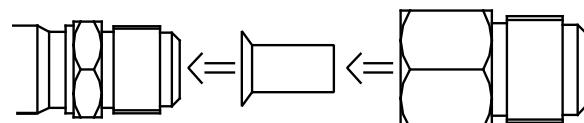
#### Note:

When use four divergence box, the un-connected inlet pipe needs to be sealed up



#### Connect to indoor unit

If the indoor unit pipe size is larger than four divergence box indoor side pipe size, it need to change small adaptor to bigger one.



## Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

### 5.4 Note

- 5.4.1** The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test
- 5.4.2** The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.
- 5.4.3** Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in ,expand nut ) of the indoor unit.

## 6. Electric Installation

### CAUTION

- Please select power source for indoor unit and outdoor unit respectively
- The power supply has specified branch circuit with leakage protector and manual switch.
- Indoor unit connect with power supply which is 220-240V~50Hz. Outdoor unit connect with power supply which is 220-240V~50Hz (Please set all the indoor unit power of one system into the same branch circuit.)
- Please put the connective wire system between indoor unit and outdoor unit with the refrigerant system together.
- Use 3-core screened wire as indoor and outdoor control wire.
- The installation should comply with relevant national electric standard.
- Power wiring should be engaged by specialized electrician.

### 6.1 Outdoor Unit Wiring

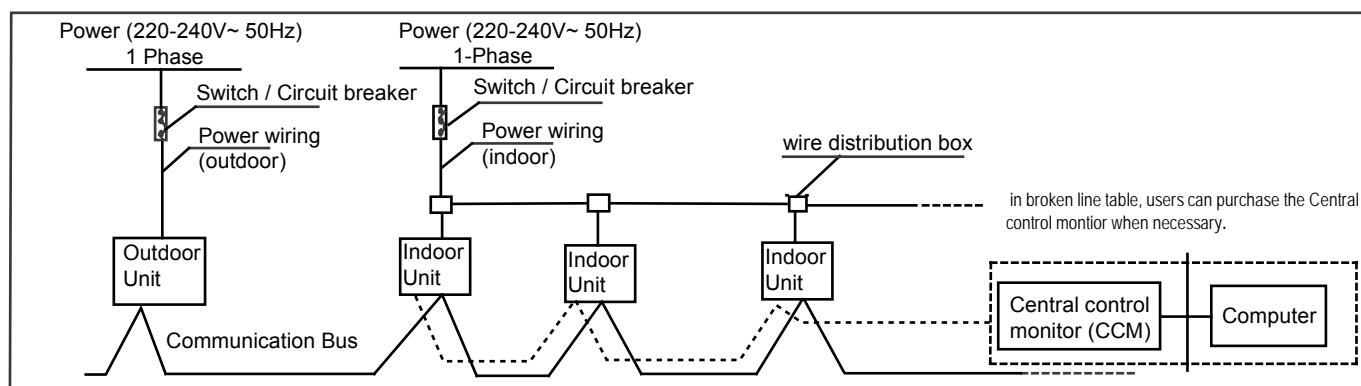
The Specification of Power

**Table 6-1**

Capacity		12kW-14kW
Outdoor Unit power	Phase	1N phase
	Frequency and Voltage	220-240V~ 50Hz
	Power Wiring( $\text{mm}^2$ )	3-core X 4.0
Circuit Breaker/Fuse (A)		40
Indoor unit/Outdoor unit Signal wire (Weak electric signal) ( $\text{mm}^2$ )		3-core shielded wire 3X0.5

### CAUTION

A disconnection device having an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National Wiring Regulation.



**Fig.6-1**

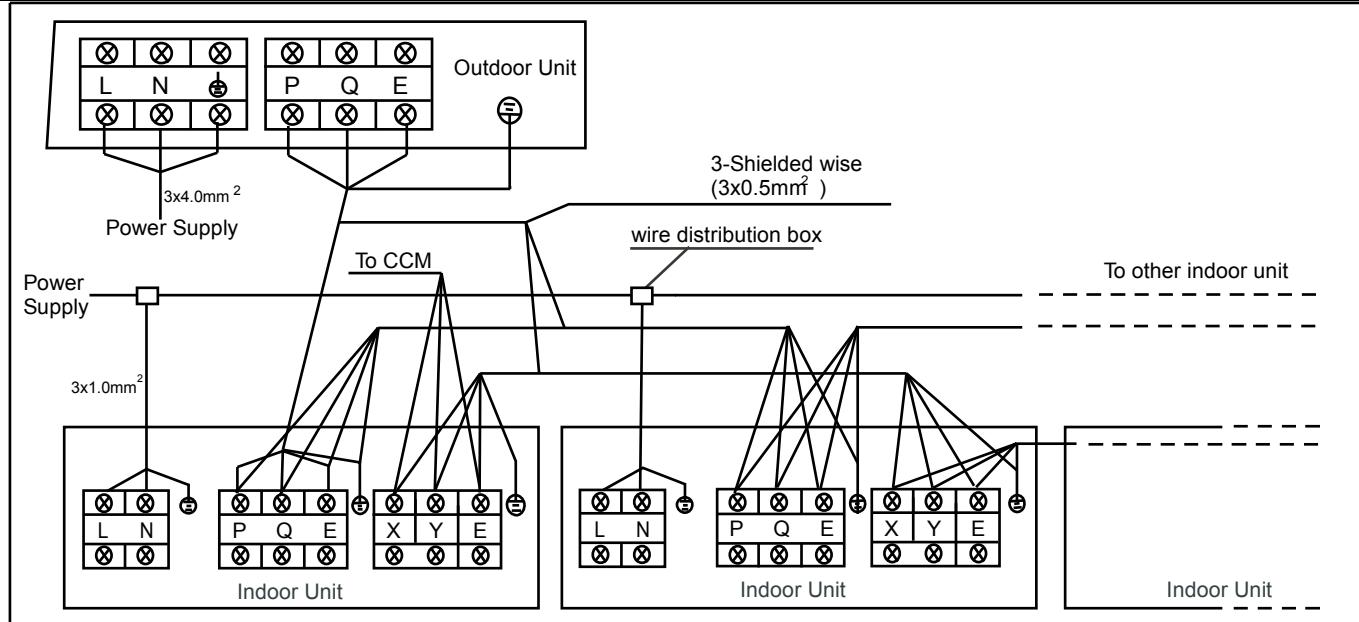


Fig.6-2

**CAUTION**

The reserved function is indicated in broken line table, users can select it when necessary.

**Indoor/Outdoor Unit Signal Wire**

Connect the wire according to their numbers.

Wrong connection may cause malfunction.

**Wiring Connection**

Seal the wiring connection with the insulation material, or the condensing dew will be caused.

**NOTE**

The air-conditioners can connect with Central Control Monitor (CCM). Before operation, please wiring correctly and set system the air-conditioners can connect with Central Control Monitor (CCM). Before operation, please wiring correctly and set system

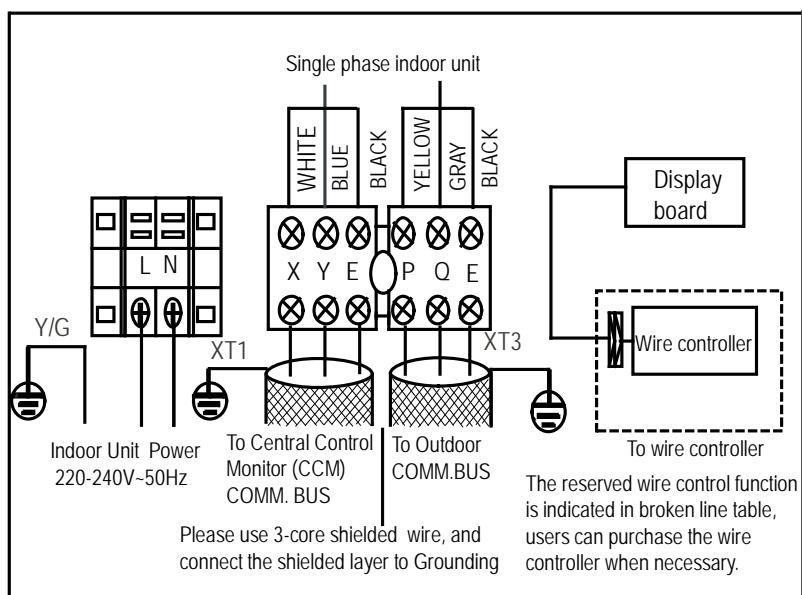


Fig.6-3

## 6.2 Indoor Unit Wiring

Power Supply

**Table 6-2**

<b>Capacity (Kw)</b>		1.8~16
<b>indoor Unit power</b>	<b>Phase</b>	1- phase
	<b>Frequency and Voltage</b>	220-240V~ 50Hz
	<b>Power Wiring(mm<sup>2</sup>)</b>	3-core×1.0
<b>Circuit Breaker (A)</b>		15
<b>Indoor unit/Outdoor unit Signal wire (Weak electric signal) (mm<sup>2</sup>)</b>		3-core shielded wire 3X0.5

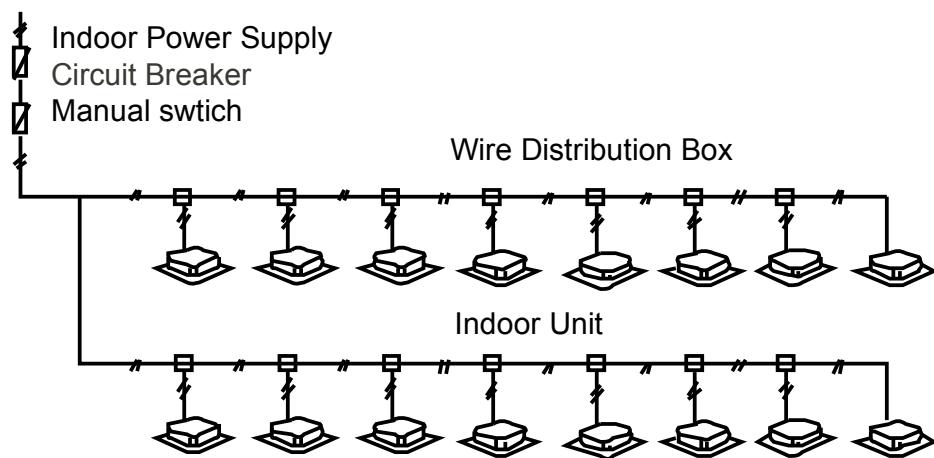
1. Signal wire is 3-core, polarized wire. Use 3-core shield wire to prevent interference. The grounding method now is grounding the closed end of the shield wire and opening (insulating) at the end. Shield is to be grounded.

2. The control between outdoor unit and indoor unit is BUS type. An address is set on field during the installation.

**CAUTION**

The wire diameter and continuous length is under the condition that the voltage vibration is within 2%. If the continuous length is exceed showing value, choose the wire diameter follow relevant regulation.

## Indoor unit power supply wiring



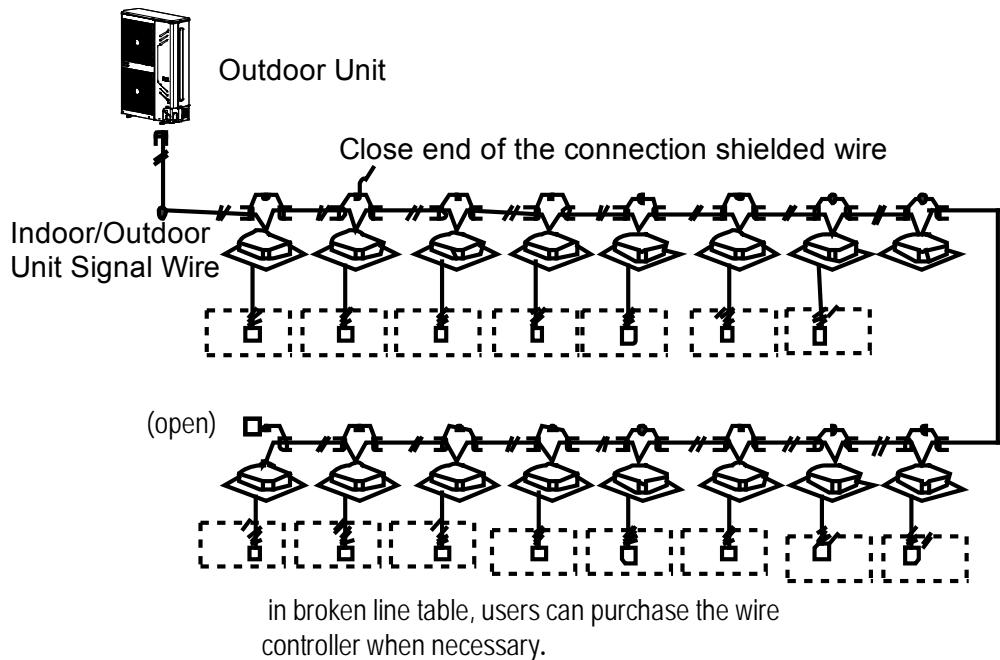
**Fig.6-4**

### CAUTION

1. Refrigerant piping system, indoor unit-indoor unit connection signal wires and indoor unit-outdoor unit connection signal wire are in the same system.
2. When power cord is parallel with signal wire, please put them into separate wire distribution pipes, and leave a proper distance. (Reference distance: It is 300mm when current capacity of power cord is less than 10A, or 500mm when 50A).

**Please use shield wire as indoor unit/outdoor unit signal wire.**

## Indoor/Outdoor unit signal wire wiring



**Fig.6-5**

## 7. Test Running

Operate according to "gist for test running" on the electric control box cover.

### CAUTION

- Test running cannot start until the outdoor unit has been connected to the power for 12hr.
- Test running cannot start until all the valves are affirmed open.
- Never make the forced running. (Or the protector sits back, danger will occur.)

## 8. Precautions on Refrigerant Leakage

This air conditioner (A/C) adopts innocuous and nonflammable refrigerant. The locating room of the A/C should be big enough that any refrigerant leakage is unable to reach critical thickness. So certain essential action can be taken on time.

**Refrigerant critical thickness: 0.44[kg/m] for R410A.**

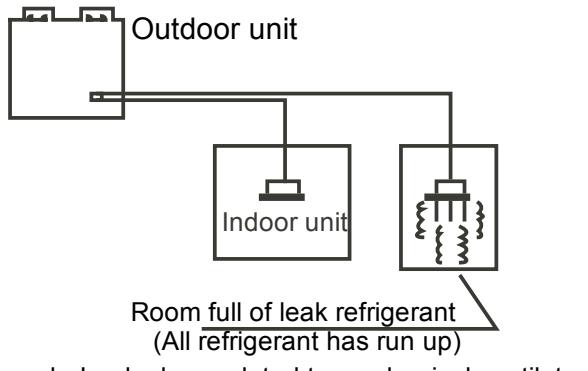
Confirm the critical thickness through follow steps, and take necessary actions.

1. Calculate the sum of the charge volume (A[kg]) Total Refrigerant volume of 10HP=factory refrigerant volume + super addition
2. Calculate the indoor cubage (B[m]) (as the minimum cubage).
3. Calculate the refrigerant thickness

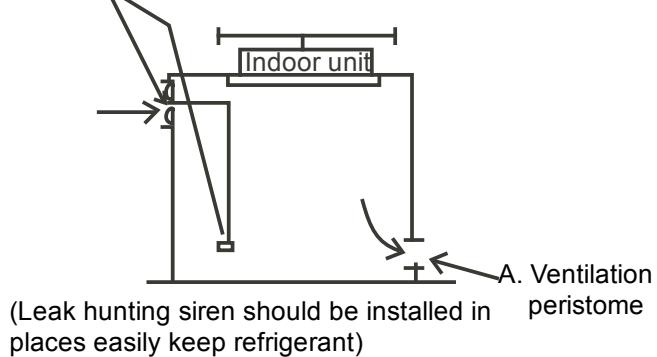
$$\frac{A[\text{kg}]}{B[\text{m}^3]} \leq \text{critical thickness}$$

Counter measure against over high thickness

1. Install mechanical ventilator to reduce the refrigerant thickness under critical level. (ventilate regularly)
2. Install leak alarm facility related to mechanical ventilator if you cannot regularly ventilate.



b. Leak alarm related to mechanical ventilator



### NOTE

Please press "constraint cool" button to carry out refrigerant recycling process. Keep the low pressure above 0.2MPa; otherwise compressor may be burnt out.